Safety Maintenance

EST. 1901 • AMERICA'S PIONEER MAGAZINE IN ITS FIELD • JUNE, 1957 • 50¢

Published By Alfred M. Best Company, Inc.

NO CURL...

The Biggest News in

Safety Leggings and Spats

...thanks to American Optical Engineering!

ADVANTAGES

1. **Positive Protection against Molten Metal Splash**
2. **Snug Conformity of the Flare with the Shoe**
3. **Longer Life — Up to 400% Approximately**

You're looking at a revolutionary development in Protective Leggings and Spats — American Optical's new "no-curl" flare. It's made of a specially developed compound which always "behaves" — *lies flat on the shoe.* We've tested it against all molten metals from lead to steel. One steel mill, for example, reported no curling — *no sign of curling* in eight to ten weeks of constant use!

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So, once again American Optical comes up with a quality "first" that gives you more for your money — proving it *pays* to insist on Ⓐ trademarked safety products. Your nearest American Optical Safety Products Representative can supply you.

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Always insist on the Ⓐ Trademark on Lenses and Frames

American Ⓐ Optical
COMPANY
SAFETY PRODUCTS DIVISION

SOUTHBRIDGE, MASSACHUSETTS • BRANCHES IN PRINCIPAL CITIES

(For details, use Key # E-1 on card on page 73)

Good news for everyone who works where there's danger of Heat Fatigue!

Now you can take Salt Tablets without feeling ill

You and your employees will like Morton Yellow Impregnated Salt Tablets. These are non-sickening salt tablets made by a special patented process that uniformly coats the individual salt crystals to control the dissolving rate of the tablet. This controlled dissolving rate means that essential body salt lost through perspiration begins to be replaced immediately, but at a gradual, non-nauseating rate.

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Complies with Federal Specifications SS-S 31f for Type III, Class C Impregnated Salt Tablets. U. S. Patent No. 2,665,236 Patented 1954 (Canada) No. 501,316.

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Title_____

Company_____

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MORTON SALT COMPANY

Dept. SM-6 120 So. LaSalle Street, Chicago 3, Illinois

(For details, use Key # E-2 on card on page 73)

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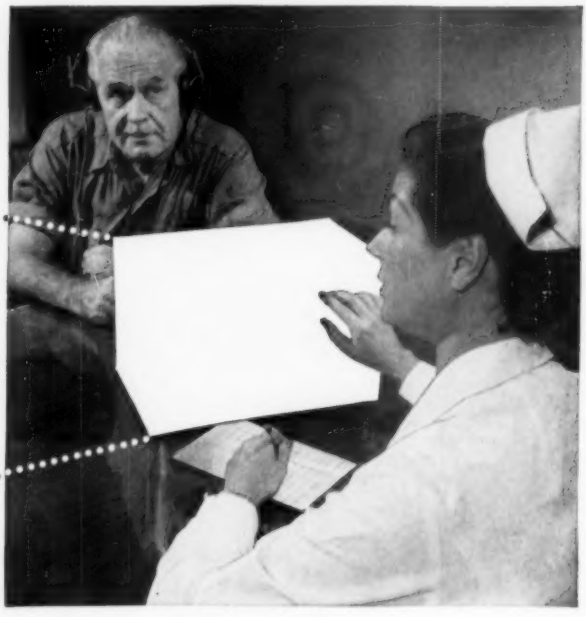

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(For details, use Key # E-3 on card on page 73)

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Safety Maintenance

formerly "SAFETY ENGINEERING"

Volume 113, Number 6 **June, 1957**

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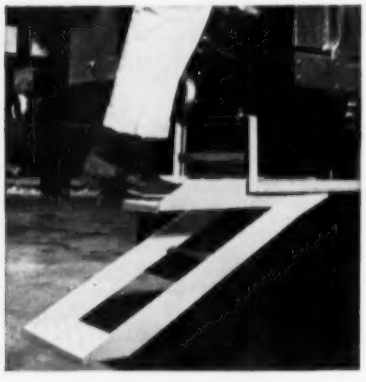
AMERICA'S PIONEER MAGAZINE IN ITS FIELD

SAFETY MAINTENANCE is indexed regularly by Engineering Index, Inc., New York

Take the danger out of this zone!



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Truck Safety Steps

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Write for technical literature

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(Use Key # E-4 on Inquiry Card on page 73)

New Haven, Conn. *June 4–5*

Twelfth Annual Connecticut Safety Society Conference (Jewish Center Bldg.). Dennis J. Hickey, Manager, Waterbury Mfg. Co., Waterbury, Conn.

San Francisco, Calif. *June 11–13*

Third Western Plant Maintenance & Engineering Show (Civic Auditorium). Clapp & Poliak, Inc., 341 Madison Ave., New York 17, N. Y.

Buffalo, N. Y. *June 12–14*

Second Annual Radiological Safety Conference (Canisius College). Isador Lubin, Industrial Commissioner, N. Y. Dept. of Labor, 80 Centre St., New York 13, N. Y.

York Harbor, Me. *September 12–13*

Thirtieth Annual Maine State Safety Conference (Marshall House). Arthur F. Minchin, Secretary, Department of Labor & Industry, State House, Augusta, Me.

Chicago, Ill. *October 14–16*

Second Annual Sanitation Maintenance Show & Conference (Navy Pier). Orkin Exposition Managements, 19 W. 44th St., New York 36, N. Y.

Cleveland, Ohio *November 11–15*

Eighty-Fifth Annual Meeting of the American Public Health Association. Dr. Reginal Atwater, executive director, APHA, 1790 Broadway, New York 19, N. Y.

Chicago, Ill. *January 27–30*

Ninth Annual Plant Maintenance and Engineering Show & Conference (International Amphitheatre). Clapp & Poliak, Inc., Exposition Management, 341 Madison Ave., New York 17, N. Y.

New York, N. Y. *April 14–18*

Twenty-Eighth Annual Greater New York Safety Convention and Exposition (Statler Hotel). Greater New York Safety Council, 60 East 42nd St., New York 17, N. Y.

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Safety is made attractive...vivid...colorful...

each worker clearly sees how safety benefits him.

You get enthusiastic safety cooperation instead of

tolerance...from every employee...every month.

YOUR
Safety News
PUBLISHED IN THE INTEREST OF YOUR SAFETY
THE JOHN DOE COMPANY, INC.
PROTECT YOURSELF
3
WAYS
There are three safe practice ways that do the most good in keeping free of accidents, all based on your personal desire to know safety and keep yourself safety-minded by studying the hazards of your work. They are:
1 Make sure all guards are in place and working and wear the personal protective equipment your job requires.
2 Learn the safe way to do a job and do it just that way.
3 Report, avoid or eliminate all unsafe conditions.
As we see it: Safety is part of every job and like any craft it requires skill.
John Doe

Size 8½" wide x 8½" deep

...talks the worker's language!

Full of color, pictures, humor and snap, it makes safety interesting and down-to-earth. 12 times a year it covers every accident hazard. Nationwide, leading industrial firms state it's the *only safety paper their employees will read* . . . and take home to their families.

It gives you the advantages of personal contact, saving time and money. When it prevents one Lost Time accident, it has more than paid its cost for the year. Try it . . . it works!

Your Imprint Here!

makes YOUR SAFETY NEWS your own publication . . . a good-will ambassador . . . another force for better industrial relations.

Every employee feels bucked-up by a note from the boss. If you desire, your facsimile signature can be printed here.

Your Signature Here

NOTE:

Your Safety News is designed to promote better employer-employee relations. Every item is carefully weighed from this viewpoint.

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WANTED
from the CARELESS ACTS of others the WISE MAN corrects his own
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WORK OVERTIME
Dress for Safety
SAFETY SHOES
FALLS
FALLS KILL 60 EVERY DAY

IN YOUR EMPLOYEE'S INTEREST

Your employee's self interest in his own safety is always emphasized. Even household hazards are covered to keep him safety-conscious every minute, not only in the plant, but at home and on the way to work.

CHOCK-FULL OF ILLUSTRATIONS

Artwork is carefully chosen to lodge home each point. The cartoon style makes YOUR SAFETY NEWS as familiar and as welcome as the Sunday supplement.

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Keeping the contents folksy, adding the grace note of humor, delivers your safety message with a nudge instead of a bludgeon. Your monthly chat gets enthusiasm instead of tolerance.

VIVID COLOR

Generous use of color gives sparkle, adds to the attention-riveting qualities of YOUR SAFETY NEWS. Each issue is as lively as any news-stand favorite.

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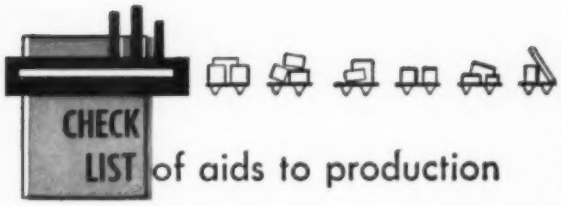

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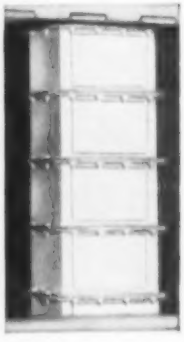
EXHAUST FUMES ARE POISON



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Name_____

Firm_____

Street_____

City_____ Zone_____ State_____

(For details, use Key # E-5 on card on page 73)

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● REALISM NOT PATERNALISM

Excessive paternalism in industry, as in government can be carried to ridiculous extremes. In our national life it often brings in its wake many obvious abuses, chief of which is the tendency to let others carry all the load, thus stifling initiative, enterprise and even self-respect. The result can be the same in industry.

The other extreme is just as ridiculous; it is obsolete, completely unrealistic and can lead to actual danger. This is manifested by utter indifference to employee health. When short-sighted management, happily a tiny minority, is unconcerned with employee health, it can be prepared for costly splashes of red ink on its financial reports.

The use of new materials and the development of products—both existing and those in the planning stage—almost inevitably bring new health hazards. But the progress of the organized safety movement and the accomplishments of American industry in general are a glowing tribute to our ability to cope with those new hazards as soon as they begin to rear their heads. In fact, in many activities, progressive management and forward-looking production men begin to evaluate possible dangers to health long before the finished product is ready for market.

In starting a proper approach to the subject of employee health, no one would suggest that the plant need become a branch of the Mayo Clinic even in miniature. But failure to maintain a close watch on health of all the working staff can be the most costly form of indifference.

A dramatic accident will alert the entire organization merely because it was spectacular. Lost time and lost profits can be just as serious when management tolerates insidious dangers to health. Dangerous fumes, vapors and substances, unscientific ventilation, unsanitary conditions all show up as losses especially if tolerated over a period of time. Certainly when management actively and positively concerns itself with all phases of employee health conservation, it isn't being paternalistic—merely realistic. And that's just another way of saying "resorting to accepted practices of good business."

● THAT TIRED FEELING

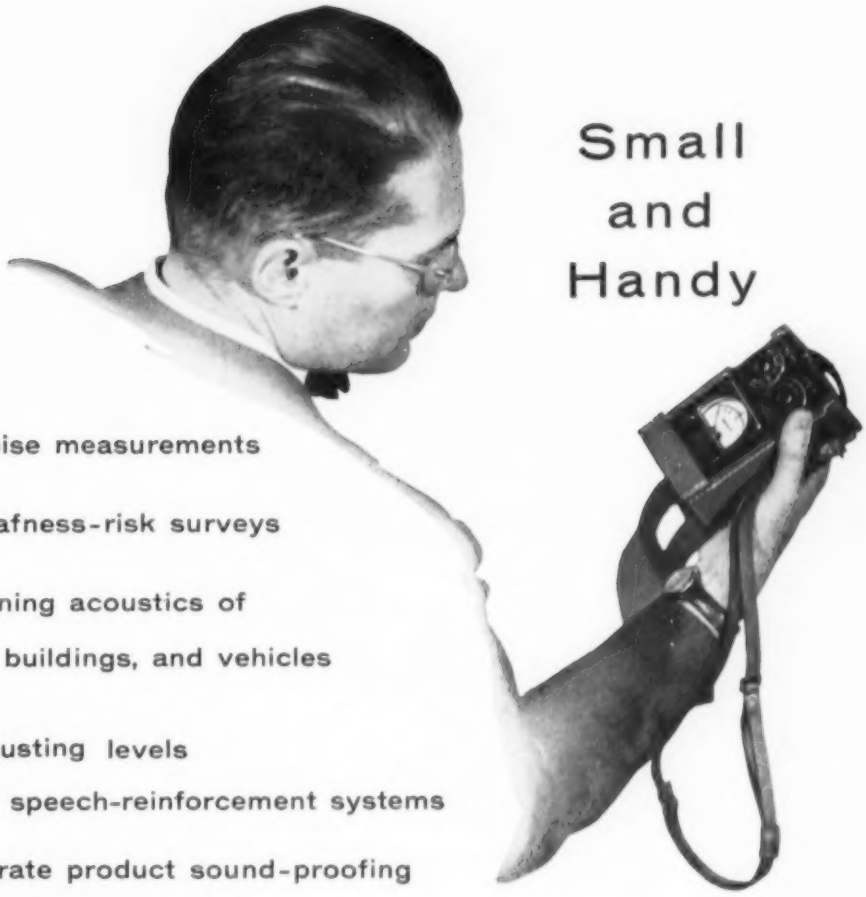
Loss of bodily salt through profuse perspiration on hot jobs or in hot climates is a "drag" on the constitution. The result is an inability to concentrate and that tired feeling which we know is heat fatigue.

Since the body does not store a reserve supply of salt, any substantial salt lost through perspiration must be replaced quickly to avoid heat sickness and even collapse.

Salt replacement will not cause hardening of the arteries or any of the other diseases straight out of Old Wives' Tales. In those cases where a heart involvement may indicate a salt-free diet, the victim should not be exposed to hot jobs in the first place!

For the average healthy workman, however, heat fatigue, cramps or collapse can be prevented by replacement of bodily salt loss. Moreover, modern, coated, non-sickening salt tablets will not cause nausea as they are not dissolved until they enter the intestines when the salt is absorbed into the system without upsetting the stomach.

Even office workers are not immune to heat fatigue on hot, humid days and an occasional salt tablet popped into the mouth will help avoid lessened pep caused by salt loss. It may be a very inexpensive help to getting that salary raise! H. A.



Small and Handy

★ for machinery noise measurements

★ deafness-risk surveys

★ for determining acoustics of materials, buildings, and vehicles

★ for adjusting levels of speech-reinforcement systems

★ to demonstrate product sound-proofing

the G-R Sound Survey Meter is designed for the use of consultant, industrial safety engineer, hygienist and others who need an easily portable device with which to make accurate sound-level measurements. This completely self-contained and inconspicuous instrument can be operated by anyone. It weighs less than 2 pounds, fits in a coat pocket, and costs only $160 complete with carrying case.

Lifting the cover flap of the leather carrying case exposes the instrument's two controls and large indicating meter. Finger-tip control turns the instrument on, selects one of the three frequency characteristics and checks batteries. To make a measurement, the "Level-db" control is rotated with the thumb until the meter needle rests on scale; the sum of meter and thumb-control readings gives the sound level at the instrument's microphone.

The sound-pressure-level range is from 40 to 136 db. The three frequency-weighting networks provided approximate the ear's response at low, medium and high sound levels; these characteristics are derived from specifications of the American Standards Association for more expensive laboratory-type sound-level meters.

For complete information about this and other G-R sound-level and vibration measuring instruments, write for the General Radio Sound Bulletin.

All G-R Products are now covered by a *2-Year Warranty*

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(For details, use Key # E-6 on card on page 73)

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(For details, use Key # E-7 on card on page 73)

FALL IN FOR INDUSTRY DEFENSE

by **V. L. COUCH**
Director, Industry Office
Federal Civil Defense Administration

If an enemy attack occurs, the government will not come to you on the run, wearing a tin hat, with a flashlight, whistle and first-aid kit. In the final analysis, each industrial concern is responsible for its own civil defense. How can industry minimize destruction and increase its chances to survive?

Civil Defense is simply a way of saving lives and property. It is a way of protecting you, your families, your industrial plant, our schools, our hospitals, our citizens. It is a way of helping to keep you going, and to keep production going —in spite of atomic, biological or chemical warfare.

From the standpoint of industry, one of the chief aims of Civil Defense is to help you stay at work no matter what may come. Radioactive fallout alone can produce industrial paralysis. Many factories, even though intact and even though manpower might be summoned, utilities restarted and raw material available, could be put out of commission by residual radioactivity, as explained on page 13. It is almost unbelievable that our large industries and industrial centers could be so paralyzed but, unfortunately, it's true.

But certain protective measures can be taken which will reduce the damage which might otherwise result from these attacks. Civil defense is set up by Federal and State law. But no laws in the world will work unless you back them up by your own actions. In the end, the responsibility for civil defense is yours! The more you know, and the better trained you are, the better your chances for survival, both as an individual and as a company or corporation.

What to Do First. First, you must prepare yourself to meet the results of an attack. You can begin by reading the official FCDA booklets and pamphlets which have been prepared for your guidance. Your state or city also may have special publications. It is your job to get them and study them. No one can do that for you.

A review of the booklets on self-protection may convince you that perhaps the most effective measure for survival is evacuation. Evacuation, of course, requires planning by government officials, industrial leaders, church leaders and the individual. Several cities have already demonstrated its feasibility in test evacuations by actually moving

thousands of people to safer areas some distance away.

Evacuation is not the total means of survival. Shelters will always be needed on the fringe areas of damage and for those who are unable to be evacuated. Ninety percent of the people in a backyard shelter of reinforced concrete and earth coverage would be safe at three miles from ground zero, and all at five miles.

Another important protective measure is cover from radioactive fallout. The problem is to prevent the fallout from staying on our skin or in our clothes for too long a time. Under some conditions a good basement or a good house will provide satisfactory cover. An earth-covered backyard trench will also provide good shelter. People must, of course, stay under cover long enough for the radioactive ash to decay.

The above are things that must be done generally to meet the threat of an enemy attack. Now, let's consider what specifically can be done to protect U. S. industry.

THE NATIONAL PLAN FOR INDUSTRY DEFENSE

The Federal Civil Defense Administration is responsible for developing and promoting a national plan for the protection of life and property during an attack or other disaster conditions. An important part of this plan is protection of our industrial production—a national plan for industry defense. As envisioned, the over-all Government-wide plan includes ten major types of activity.

The Civil Defense organization in a city is usually staffed by employees of the city and volunteers. In industry the same type of protective measures are needed. However, in industrial plants and other large facilities the plans and organization are under the leadership of the managers or owners.

Now, let's take a brief look at the ten different parts of the plan for industry defense:

1. Establishment of a plan and organization for self-protection in industrial plants and other large facilities. Self-help or self-protection is the concept of organizing and training small groups within an industrial plant or other large facility for the purpose of performing specialized services necessary to safeguard the plant and its occupants in time of disaster. The civil defense self-protection organization is not expected to replace normal protection employees or groups. Instead, it is designed to help **expand existing facilities** to meet large-scale disaster more effectively. This means that a civil defense organization in a plant would result in the enlargement and extension of such protective services as the plant fire brigade, the police or guard force, rescue teams, first-aid workers and other groups to the extent that they can deal effectively with emergencies—in the plant. Of course, this same organization is a supplement to the other civil defense organizations existing in the cities.

2. Establishment of a plant security system for prevention of espionage and sabotage. Although counteraction against espionage and sabotage is primarily the responsibility of the Government, there are many steps which can be taken within industrial plants to reduce or eliminate the danger from covert enemy activities.

Such protective measures include fencing, protective lighting, guard or watchman services, investigation of applicants and employees and others for loyalty, safeguarding classified security information and proper reporting of suspicion of espionage, sabotage and subversion.

3. Establishment of shelters—protective construction. This includes the alteration and strengthening of existing buildings and inclusion of protective features in design of new construction.

As an incentive to industry to provide this protection certain benefits have been offered such as government loans and provision for accelerated tax amortization of the cost for this extraordinary construction.

4. Planning for evacuation. In Civil Defense we think of evacuation as the organized, timed and supervised movement of civilians from dangerous and potentially dangerous areas—including their reception and care in safer areas, and their return to their own home communities. The movement of great numbers of people requires **careful planning in advance**—especially in order to avoid the confusion which is sure to result from the spontaneous and rapid movement of people not properly informed and not properly directed.

In some instances it may be decided by local Civil Defense authorities, in advance of an attack warning, to encourage and assist the voluntary movement of children, mothers and other priority groups out of danger areas. This kind of planning and action is of special importance in order that essential workers in defense or production may be able to remain at their posts with the knowledge that their families are safe. Of course, after warning of an attack is received, those who have remained behind would be moved to safe areas in accordance with preattack evacuation plans.

It always should be kept in mind that **never** will we have **definite** assurance of a specific amount of warning time. Therefore, we must be able to move, and move fast, when it is clear that there is sufficient time for evacuation.

Within industrial plants and other large facilities evacuation plans must be thoroughly co-ordinated with plans of the local Civil Defense officials. This type of protective activity is so important that at least one person should be desig-

nated on the staff of the Plant Defense Co-Ordinator, with responsibility for evacuation planning and co-ordination.

5. Planning for continuity of management. This is an important part of disaster planning, which includes the selection and equipping of alternate company headquarters, and the establishment of personnel succession lists, of emergency accounting and auditing systems and of emergency financial arrangements.

6. Protection of vital records and documents. This activity includes the duplication and safe storage of records important to the continuation of the company. It is important that written descriptions of company activities, manufacturing processes, engineering designs and vital legal documents and accounting records be preserved and available to management.

Only those records and documents necessary to the continuing operation of the company should be duplicated and preserved. Microfilm is one of the most commonly used means. Protective vaults should be provided at safe distances from the plant—preferably, at or near the alternate company headquarters or alternate plant sites.

7. Planning for emergency repair and restoration. This is an important part of disaster planning and consists of those activities which are considered necessary to quickly assess and repair damage, and quickly restore production.

Important in this planning is the selection of alternate plant sites and alternate suppliers; the maintenance of reserve stocks, advance programs of engineering construction, alternate equipment designs and appropriate warehousing and inventory arrangements.

Planning for restoration of production should include exploring such factors as the necessity to procure new machines and equipment, the possibility of repairing damaged machinery and equipment, the feasibility of having contractors perform certain operations and the development of alternate methods and the use of substitute machinery.

8. Establishment of mutual aid associations. This is an organization

What About Radioactive Fallout?

The effects from atomic and hydrogen bombs are heat, blast, and radiation. A ground test of a thermo-nuclear device (not a bomb dropped from the air) in the Pacific in November 1952 indicate certain indisputable facts regarding the effect of this type of weapon:

1. The fireball itself measures 3¼ miles in diameter.

2. The blast completely destroyed the island on which the explosion occurred, leaving a crater about one mile in diameter and 175 feet deep at the deepest part.

3. The area of total destruction covered a circle six miles wide.

4. Heavy to medium damage occurred at a distance of seven miles from the point of explosion, or ground zero. Light damage occurred at points ten miles from ground zero.

5. Some damage from any similar device would be suffered over an area of somewhat more than 300 square miles (about the area of Metropolitan New York City), with complete destruction covering approximately 30 square miles.

6. After 12 minutes the cloud was nearly 20 miles high and 100 wide.

The results of heat and blast from any explosion are well known, but a third characteristic of a nuclear explosion is radiation, both immediate and residual. The immediate nuclear radiation released instantaneously with the explosion on or near the ground does not present a serious hazard beyond the area where heat and blast are of great concern. In areas of total and heavy destruction, the damage has already been done by the heat and blast, and the radiation could have little additionally damaging effect.

Residual radiation, however, may be expected to affect very large areas for a considerable period of time, depending on whether the explosion takes place in the air or on the ground.

The radioactivity produced from an in-the-air explosion, where the fireball does not touch the earth's surface, condenses only on solid particles from the bomb casing itself and the dust which happens to be in the air. These minute substances may settle to the surface over a very wide area (probably spreading around the world) over a period of days or even months. But they descend so slowly that most of their radioactivity has been dissipated harmlessly.

But if the weapon is detonated on the surface, or so that the fireball touches the surface, then large amounts of material will be drawn up into the bomb cloud. Many of these particles will be heavy enough to descend rapidly while still intensely radioactive. The result is a comparatively localized area of extreme radioactive contamination and a much larger area of some hazard.

The pattern of radioactive fallout is determined by the size of the particles and by the direction and velocities of the winds. In general, the region of severe fallout from a surface nuclear explosion is an elongated, cigar-shaped area extending down-wind from the point of burst. As an example, it is estimated that in the down-wind fallout areas of the March 1954 Pacific tests, if human beings had been there and remained out-of-doors for 36 hours to receive the maximum exposure, the lives of nearly all would have been threatened by the radioactive fallout in an area about 140 miles long (and of varying width up to 20 miles), about one half would have been threatened from 140 to 160 miles, and 5 to 10 percent would have been endangered up to 190 miles.

of officials of a group of industrial facilities in a given area or community, united by a reciprocal agreement to provide assistance to each other in the form of equipment and/or personnel when needed in time of disaster.

Although many industrial facilities have established excellent plant civil defense organizations, few can provide all of the resources needed to cope with a major emergency. It can be assumed that in the event of attack or major natural disaster the services of the organized community protective forces may be unavailable to industry because of greater demands elsewhere. In most instances, therefore, industrial facilities must rely upon their own self-protection organizations for assistance. Such help can best be assured if a number of plants in the same community or area pool their resources by agreement.

9. Deconcentration of production. When production of particular essential items is concentrated geographically, an inviting target is offered. Deconcentration refers to the geographic dispersion of particular kinds of production.

Planning should provide relocation to other plants in other geographical areas of not only the key production of critical items, but also relocation of key departments of a critical plant or facility, including management and technical offices.

10. Industrial dispersion—reduction of urban vulnerability. This is the employment of the simple military measure of using space or topography for defense of industrial plants against attack. The National Dispersion Program is designed to encourage the dispersion of only the **new** plants and **expanding** industrial facilities.

It is reasonable to assume that if industrial plants are moved to less concentrated areas, employees and their families also will move. Therefore, our city populations will be thinned out and, to a great measure, will become less attractive as an enemy target.

Industrial dispersion must be well planned and in no instance should result in a reconcentration of population to the extent that another target area is developed.

Seven Steps to Plant Self-Protection

1. THE CO-ORDINATOR: In each plant there must be effective civil defense leadership. Owners and managers have the responsibility for providing this leadership, must authorize this type of activity, and should designate a person to take charge of this activity—a plant civil defense co-ordinator.

The co-ordinator must have executive ability, be an individual trusted by both management and employees, and be able in an emergency to take complete charge of the situation. He must be thoroughly trained in basic civil defense organization and methods, obtain current information, and get specialized help from casualty insurance underwriters, fire inspectors or safety engineers. The National Civil Defense College offers special training and the FCDA Industry Office provides courses and conferences.

2. EMPLOYEE-MANAGEMENT COMMITTEE: The co-ordinator will need support and help in getting the job done. A good way to provide this assistance is through the establishment of an employee-management committee, if one does not already exist.

3. PLANT & SHELTER SURVEY: The third step is to make a survey of the plant buildings and the shelter requirements. The FCDA manual, "Method for Determining Shelter Needs & Shelter Areas," will be helpful. Here are some pointers: Shelter areas should be in the center or core of the building, away from exposure to the outside; in a structurally compact part of the building, with a close spacing of columns and short-span beams; out of direct line with doors, windows and hallways with outside exposures; with no glass in walls or doors; have at least one interior stairway; contain no furnaces, boilers, nor large steam, water or gas pipes; without a hung or suspended type ceiling and without heavy lighting fixtures or plaster ornaments; be free of furniture, merchandise or equipment; and not have safes, banks of filing cabinets or heavy machinery on the floor above.

4. EMERGENCY PERSONNEL: Emergency protection personnel must be selected, trained and assigned. These include wardens, police, firemen, engineering and rescue workers, medical and welfare workers. State and local civil defense units can be helpful in training.

In the early stages of planning, present the self-protection program to all your employees. They will be more cooperative if they participate from the beginning.

5. BUILDING FLOOR PLAN: Make a floor plan showing branch control rooms, first-aid stations or cabinets, fire extinguishers, elevators and stairs, emergency lights and exits, and a general traffic plan within the plant.

6. SIGNS & INFORMATION: Post directional and other information signs, including evacuation instructions.

7. EMERGENCY SUPPLIES: Provide emergency supplies in shelter areas, such as first-aid kits, emergency water and emergency lighting. All persons assigned to defense tasks should have proper civil defense identification and insignia.

Preparing for Self-Protection

What can be done about this problem of self-protection in your own plant? The details must of necessity vary from plant to plant, but the essential principles are the same and are clear, as shown in the accompanying "Seven Steps to Plant Self-Protection."

In addition to the seven steps to setting up the organization and facilities, exit drills should be held frequently for all employees. The first few drills should be announced in advance, but when routines have been established, drills should be at irregular intervals and without

(Continued on page 33)

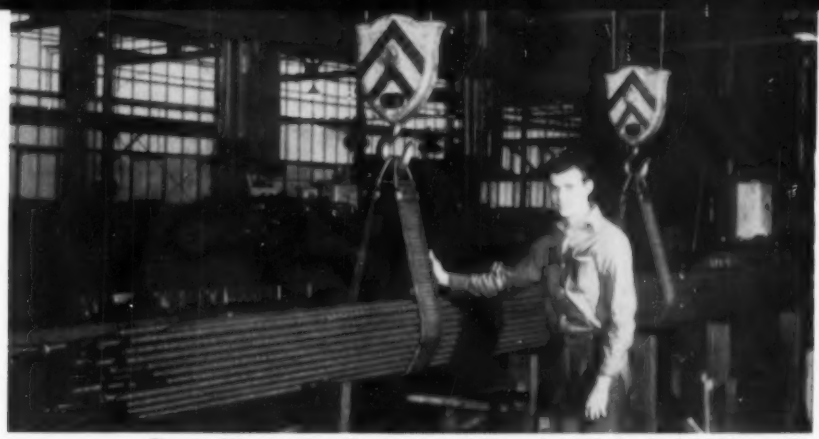


Fig. 1—Woven wire slings are used in moving this load of 7,500 pounds.

Woven Wire Slings PROTECT

In Handling Sharp-Edged Cold Finished Bars

by **JOHN C. APPLEGARTH**
The Cambridge Wire Cloth Company
Cambridge, Maryland

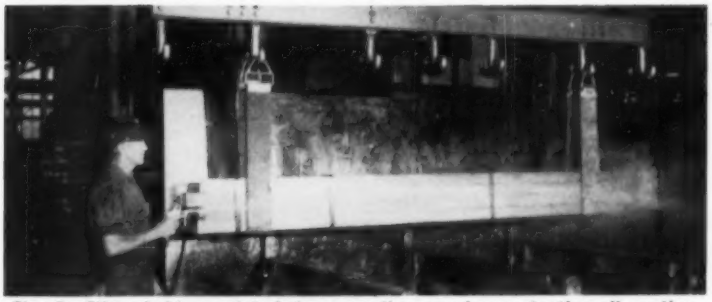


Fig. 2—Slings hold completed shapes as they receive protective oil coating.

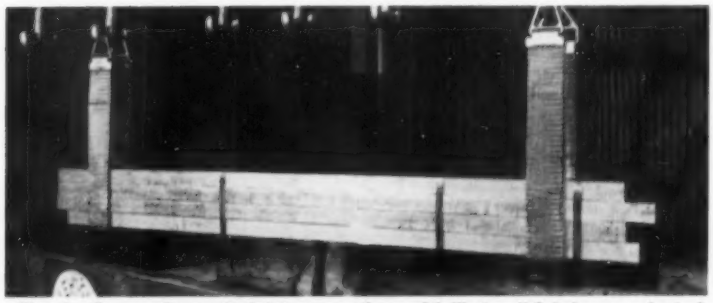


Fig. 3—For moving material to cars, slings with "helper" fabric are selected.

Fig. 4.—As bar stock goes through pickling cycle, Monel slings are unharmed.

The problem of avoiding damage to the sharp edges of cold finished steel bars—flats, squares, hexes or special sections—is an important one for any producer of these shapes. The producers' customers naturally insist that the material arrive from the producer in first class shape. Excessive damage to the edges may mean rejection and return. And, of course, returns can be costly.

However, one producer of cold finished bars in Pittsburgh, Pennsylvania, has virtually solved this problem and, at the same time, made overhead load handling much safer with the use of a type of materials handling equipment consisting of a woven wire sling. Moreover, because of the versatility of this product, this sling serves not merely as a materials handling tool but as an actual piece of production equipment.

The sling itself is of woven wire construction, which means that it is made by joining together a series of spiraled wires across the body of the sling to form a continuous length of extremely flexible and long-lasting metal fabric. Special drop-forged and heat-treated handles, male and female, are attached to either end of the fabric, thus completing the sling. Because of this woven wire construction, these

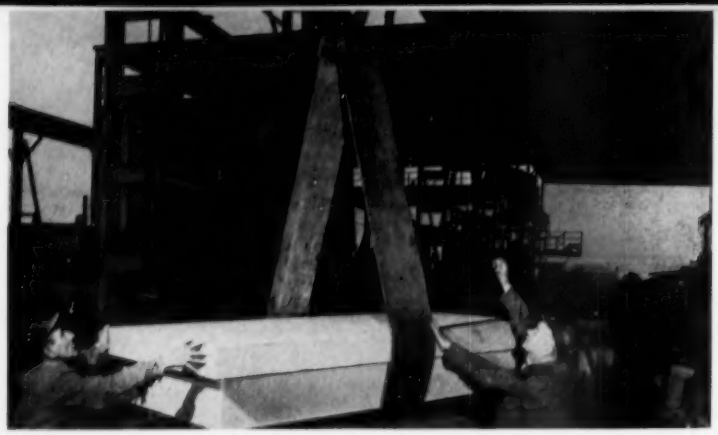


Fig. 5—Slings with broad, rubber-covered surfaces take monument stone well.

slings can be made in any length or width. The ones most commonly used by this producer are 6″ wide by 6′6″ long. In addition, they can be covered with either Neoprene or plastic compounds for further damage protection even to turned and ground shafting.

Prior to installing these woven wire slings, steel-like chains were used. These chain slings frequently caused damage by cutting or gouging into sharp-edged shapes so deeply that reworking was necessary to remove the damage.

About 3 years ago, this producer switched to the woven wire slings. Since then, according to the Works Manager, they have found that "the slings have definitely solved our problem of damage to sharp-edged shapes. Not only have they literally eliminated this damage insofar as in-plant handling is concerned, they also offer us a great degree of additional safety to our men."

While it is difficult to compute any actual cost comparison, savings can be measured by the infrequency of customer complaints on damage since the woven wire slings were introduced for handling sharp-edged sections.

Another important advantage of these woven wire slings is the fact that they will not snap, break or tear suddenly, thus dropping the load and endangering operators at floor level. Because the slings are all-metal in construction, they are not affected by the cutting action of the sharp-edged loads and because they flex across their width, there is no cutting or crushing action on the load itself.

The woven wire slings can be used in a basket hitch by attaching both sling handles to the crane hook as is done in practically every application. (Figure 1) They can also be used in a choke hitch by passing the male handle through the female handle and attaching it alone to the crane hook. This latter application is more widely used in steel warehouses or in similar cases where it is necessary to form a tight and compact bundle. In such instances, the body of the sling grips tightly around the entire circumference of the load, preventing even smaller inside members from slipping. When only a single sling is used in this fashion, the broad bearing surface presented by the wide body of the sling provides exceptional load stability.

This producer has found these slings useful in many steps in their production processes. For example, they are used at the end of the bar mill for bundling and moving drawn and straightened shapes from machines to shipping storage or inspection stations. At this point, the slings are handling loads of up to 7500 pounds with complete safety so far as damage to the sharp edges of the members of the load is concerned.

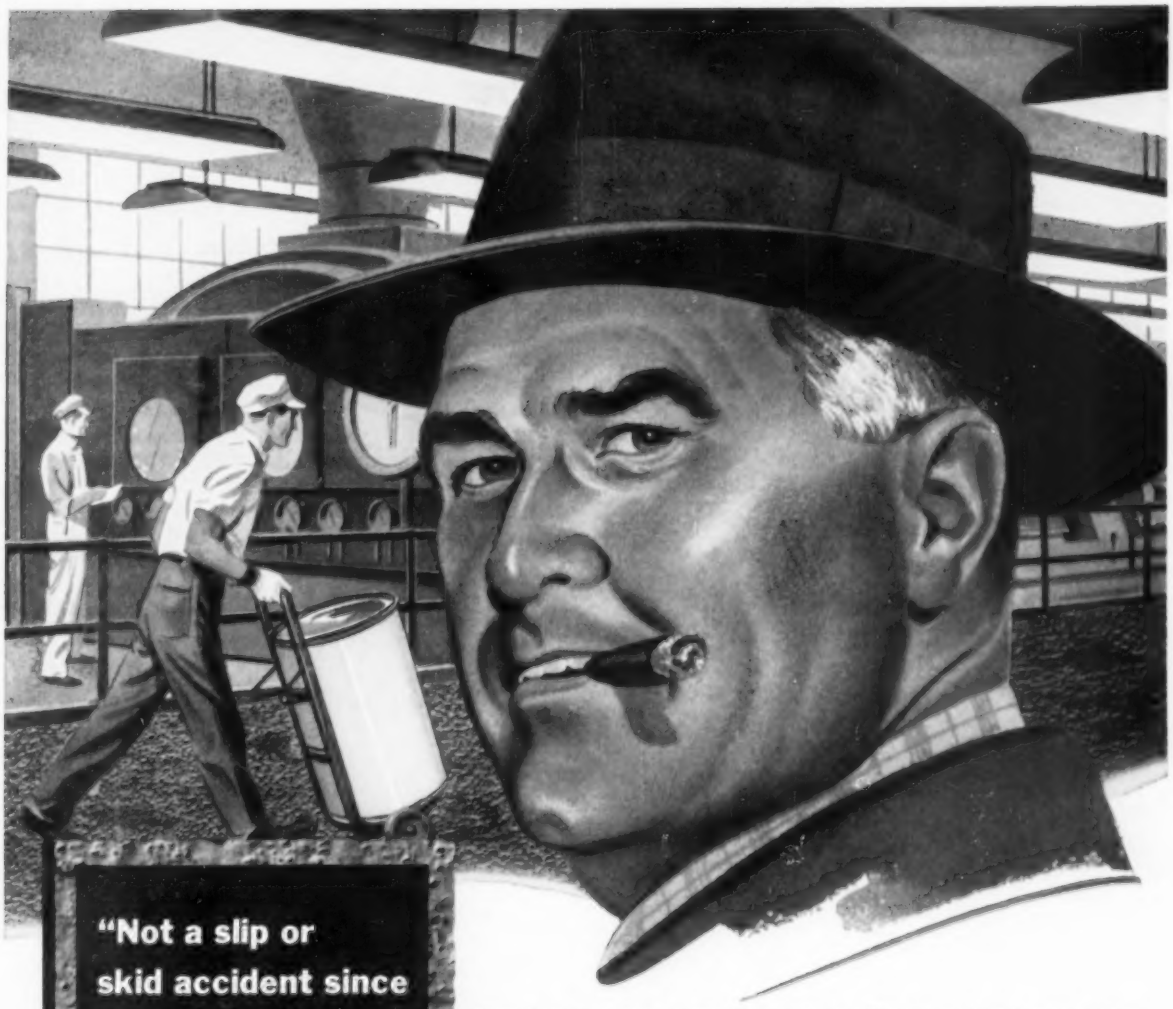
On the shipping platform, they are handling loads into racks for strapping and loading into freight cars. Usually, too, the loads moving from storage to shipment are lowered to a spray area, cradled in two slings with a spreader bar, for the spray application of an oil compound to protect the material during shipment and further storage. (Figure 2) Naturally, because the slings are all metal, they, too, benefit from the protective qualities of the oil spray.

While the basic woven wire sling is manufactured in a single thickness of body fabric, some users have found it advantageous to weld an additional length of "helper" fabric to that portion of the sling which will be in contact with the load. This "helper" layer provides a wear surface for the load, thus preventing excessive wear to the main body of the sling and making necessary only the replacement of the helper surface rather than the main body when wear does occur. (Figure 3) Of course, too, the helper fabric provides an additional safety factor. Both features combine to prolong the already long life of the sling.

The standard woven wire sling is supplied woven from plain carbon steel. However, corrosion-resistant alloys and, in fact, metals other than ferrous alloys are also available. Tests are now being conducted on the use of a Monel metal sling for handling shapes through the pickling and liming operations prior to drawing and forming. (Figure 4) The all-Monel sling will be unharmed by the corrosive action of the 15 percent sulfuric acid pickle solution and the open mesh of the sling will provide absolutely free drainage of the pickle solution and subsequent washes and lime baths. Of course, the no-damage factor is also important here. The all-metal sling is also unaffected by the elevated temperatures of both the pickle and the liming processes.

Still another experimental use is that of a Neoprene covered sling for handling bar stock coming out of the oil dip. Neoprene covering is resistant to oil damage or penetration while the woven wire sling within the Neoprene shield offers the basic advantages of safety, ease of handling and freedom from damage. It may be that this type of equipment can provide the truly all-purpose sling for concerns using hot and cold processes and where load damage is an important factor. One interesting application of the Neoprene covered sling outside the metal field is the handling of finished stone slabs, as in building construction and monument work. As shown in Figure 5, the Neoprene covering prevents any chipping, scratching or marring of the finished stone surface.

(Continued on page 29)



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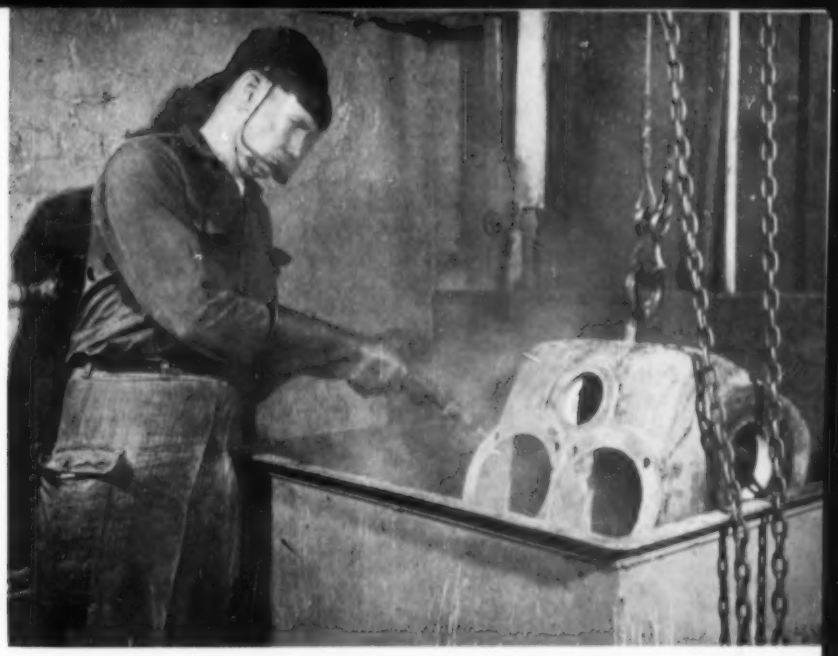
(For details, use Key # E-8 on card on page 73)

7 Steps to Eye Safety

Facts and Figures on Eye Safety Prove It's and Cheaper to be Fully Equipped than

Smarter Totally Blind



by **ALDO P. OSTI**
Safety Engineer
Chas. Pfizer & Co., Inc.
Brooklyn, N. Y.

Eye injuries constitute about 4 percent of our over-all industrial injuries in 11 states, as reported by the National Safety Council. There are approximately 75,000 such cases a year. If all the victims of eye injuries were brought together, at one time, they would overflow the seating capacity of Madison Square Garden in New York several times over. In fact those victims would go far to fill at any one time a huge football stadium. The devastating fact in this whole matter is that 95 percent of all eye injuries caused by flying particles, tools, machinery, splashing liquids and infections are easily preventable.

Initial steps toward setting up an effective eye protection program can be taken through the evaluation of eye hazards and resultant accidents. Unless the program gets beyond the paper stage and becomes a part of management's thinking, little progress will be made.

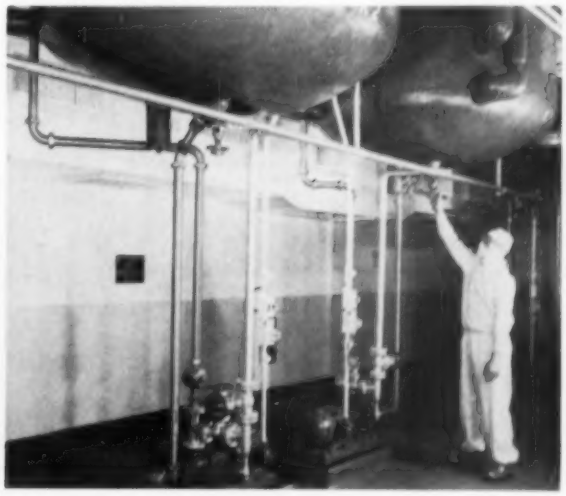
In order to provide management with information and vital, effective selling points for an eye safety program, the following guides should be considered:

A) Establish the need.
B) Survey the work areas to determine WHERE eye protective equipment is needed.
C) Determine the cost.
D) Set the responsibility.
E) Research new equipment.
F) Keep accurate records.
G) Develop a cooperative attitude.

EYE PROTECTION SERIES
other articles May & July

A. ESTABLISH THE NEED

It is estimated that 80 percent of our activities are controlled by our eyes, therefore, it would be sound judgment to know how good an



Eye Safety Program Must Reach All Levels

SUPERVISORS

FOREMEN

EMPLOYEES

employee's eyes are. Further, surveys have proved that 40 percent of all operators have slight visual defects which hamper working efficiency. The National Society for the Prevention of Blindness has published manuals and forms to be used as guides. This literature illustrates, among other things, the essentials of determining each employee's visual capacity and proper assignment of the employee with respect to his visual skill.

B. SURVEY THE WORK AREAS to determine where eye protection equipment is needed

The National Safety Council indicates that 95 percent of all eye injuries are caused by flying particles, misuse of tools and machinery, splashing liquids and injurious rays. These injuries could have resulted from unsafe actions or conditions. The plant survey should indicate where unsafe actions could be corrected through proper training and guidance. Where unsafe conditions exist, they should be first controlled by attempting to remove the hazard by mechanical means. Only as a secondary measure should protective eye equipment be issued . . . that is, provided the hazard involved cannot be eliminated by a revision in process or guarded against mechanically. It is a known fact that the use of mechanical methods is generally more reliable than eye protection assigned to an employee since human behavior is such a variable. However, glasses, goggles, face shields, masks, acid hoods or other suitable devices that provide complete protection should be issued where there is a possibility that an eye injury might occur. Further guides on what eye protection would be suitable for an employee could be obtained from the National Bureau of Standards Handbook, #24.

C. DETERMINE THE COST

In determining the cost of an effective eye program, first make an analysis of eye injuries that occurred within the year. Then accu-

Efficiency!

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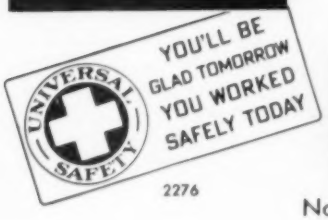

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(For details, use Key # E-9 on card on page 73)

mulate the compensation and medical costs, tabulate this data and compare it to the proposed cost of eye protective equipment. **This comparison will show that it would be smarter to be fully equipped rather than totally blind.** When estimating the cost of an eye protection program, consider environmental utilities as well as equipment that could assist is eliminating any possible hazard from flying particles, splashing liquids or injurious rays. The tabulation of indirect costs should be used to strengthen the report by including such items as retraining, down-time, filling out accident forms, etc.

D. SET THE RESPONSIBILITY

For a program to be successful, it must be practical and have direction. The responsibility for it should be assigned to the line supervisor. This is the man who will activate the program and keep it rolling. Provide this man with information, material and backing and he will, if sold on the essentials of eye protection, be instrumental in developing a proper habit and cooperative attitude in his group.

E. RESEARCH OF NEW EQUIPMENT

This is a most important point to keep in mind, in that shapes and sizes of eye glasses change and, fortunately, are always getting better. The manufacturers are all aware of the problems in keeping a pair of glasses on an employee and are always coming up with new items. We, at Chas. Pfizer & Co., Inc., could refer to an efficient cover visor that provides protection from all sides and is non-fogging. This visor solved a problem for us by substituting for a head visor, side shields and glasses.

F. KEEP ACCURATE RECORDS

The keeping of records is but a statistical reminder to you and management on the success of your program. Information obtained from the Medical Department and the distribution of stock soon would help show where eye accidents are occurring. The initial expense of putting a program into effect could be washed out by employees not wearing proper and clean glasses. Records kept on the replacement of prescription glasses and how they were damaged could be valuable data for continuing budgets for an eye protection program.

G. DEVELOP A COOPERATIVE ATTITUDE

There are a number of unrelated reasons an employee could give in not wanting to wear a pair of goggles. Among them could be: "they weigh too much" . . . "they make my eyes draw" . . . "they make me look funny" . . . "they cut down on my side-seeing ability" . . . "they fog up" . . . "they are not comfortable" . . . or "they give me headaches."

Combatting the Arguments

The above material, physical and psychological complaints, can be resolved by making sure that all employees know why they must wear eye protection. Have all employees properly fitted by a qualified person. Where physical complaints are lodged, employees should be given the opportunity to have a company paid eye examination to determine if there is a problem. Educational literature should be given to all employees on the weight of glasses (i.e. 5/7 ounces as compared to a necktie which weights 5/7 oz. or a man's hat which weighs 6 to 8 ounces).

Personal Cost of Eye Accidents

After the emotional and physical approach is satisfied, a more practical appeal to reason can be made by describing how an eye accident could affect a person's earning power. The maximum compensation for the total loss of vision in one eye is measured by a set number of weeks multiplied by a prearranged state compensation rate and rarely exceeds several thousand dollars. For the loss of both eyes, compensation payments usually run three to four times more.

All of the above can be reviewed with employees at regularly scheduled safety meetings, on company time, where the employees can make suggestions or ask questions. All in all, in order to make a program effective and show results, an earnest effort on the part of everyone must be made.

With a modest capital investment, the setting of good examples and a well organized plan, the eye protection program can succeed. Management can buy equipment; however, supervisors must build confidence in the purpose of an eye protection program.

Pictures by courtesy of Chas. Pfizer & Co., Inc.

For a copy of booklet described on opposite page, use Key # E-10 on card on page 73. →

Pittsburgh COLOR DYNAMICS® Improves Productive Efficiency in New Blaw-Knox Factory

New painting system relieves eye strain, reduces fatigue and provides greater safety for workers in modern road-paving equipment plant at Mattoon, Illinois.

BLAW-KNOX

THE NEW Blaw-Knox plant at Mattoon, Illinois, is another convincing example of the improvement in productive efficiency, safety and morale resulting from the use of Pittsburgh COLOR DYNAMICS.

● **This plant is devoted** to the manufacture of road-paving equipment—concrete pavers, spreaders, mixers, finishers, bituminous paving machines and road wideners. The 300,000-sq. ft. structure was designed by Sverdrup & Parcell, Inc., St. Louis, Mo., architects, and erected by the George A. Fuller Company of Chicago.

● **The interior** of this entire plant was painted according to the principles of COLOR DYNAMICS. The beneficial effects of this painting system are summarized in this comment by A. J. Cox, general manager of the Blaw-Knox Construction Equipment division:

● **"We selected colors** for interior walls and ceiling to create more cheerful surroundings for our workers. Stationary as well as moving parts of machines were painted in colors that help operators see their jobs better. Eyestrain is relieved. Nervous tension and physical fatigue are reduced. Safety colors mark hazard areas and safeguard workers against dangers of time-loss accidents.

● **"Our experience** since opening the plant confirms our judgment that properly planned colors are a boon to management and workers alike. They are an aid to greater productivity. The pleasant environment enhances morale. Our entire work force takes pride in our plant's appearance. Work areas are kept clean, simplifying housekeeping. The cheerful and pleasing appearance helps us to recruit new employees in an area where skilled labor has been hard to get. And we enjoy all these benefits at no greater cost than conventional painting."

● **This new Blaw-Knox plant** is only one of thousands of factories in which productive efficiency has been improved by the use of COLOR DYNAMICS. Try it in your plant—in a department or on a machine or two—and see the difference it makes.

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● We'll be glad to mail you a free copy of our fully-illustrated book on COLOR DYNAMICS for industry. It explains what this painting system is and how to use it. It contains scores of practical suggestions. Better still, we'll be glad to prepare a comprehensive color plan of your factory, without cost or obligation. Call your nearest Pittsburgh Plate Glass Company branch and arrange to have our representative see you. Or mail coupon at right.

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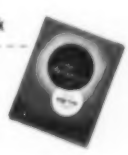

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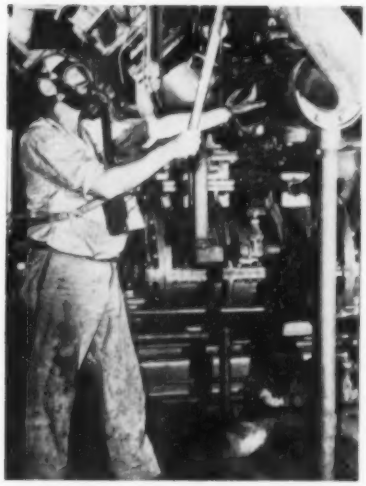
SAFETY MAINTENANCE



All-service gas mask is necessity for worker on pump where SO^2 is involved.

put safety on a realistic basis

Sound Safety Policy Cuts-Down Paper Mill Accident Rate

by **CHARLES R. HAGAN**
Safety Manager
Oxford Paper Company
Rumford, Maine

A sound safety program, combining use of accident-prevention equipment, thorough investigation of accidents, on-the-job safety training and centralization of safety responsibility, has reduced lost-time injuries at Oxford Paper Co. from a frequency rating of 27.6 in 1949 to a current frequency rate of 5.0.

The Oxford Paper Co. puts its safety program on a strict cost basis. It might seem that we are not mindful of the humane angle, but our reasoning is that if we approach this problem realistically from a cost and production angle, we can enlist everyone's interest, because everyone is interested in money. This includes the employees, who, by keeping free of injuries, make their economic status secure. Although the humane side of accident prevention is not emphasized, it is definitely there as a very much desired by-product of the program.

Our safety program was instituted under the premise that correction of unsafe conditions is the prerogative and the responsibility of management.

With this basic concept in mind, we adopted safety rules, which include safety training of employees by their own foremen, wide use of safety equipment and detailed reports on both accidents and safety activities.

The company also cuts down on accidents and injuries by making sure that employees have jobs they are able to perform. This is accomplished by cooperation with the medical and placement managers. New employees and men being

(Continued on page 28)

Employment manager, company physician study X-ray in emergency room.

Here unloading department foreman instructs truck operator in use of mask.

A SAFETY IDEA

On-the-Spot Vacuuming

Operating room cleanliness is maintained at all times in these new instrument bearing assembly and inspection areas at The Fafnir Bearing Company, New Britain, Conn. A remotely-located 5 H.P. stationary vacuum producer and dirt separator with piping to flush-mounted inlet valves permit attaching of light-weight plastic hose so that rooms may be vacuum cleaned several times daily. Rooms are completely air conditioned and pressurized to precisely control temperature and humidity. All personnel working in the area wear surgically clean gowns and caps. Many other precautions are taken to avoid transmitting any dust contamination that would adversely affect quality of finished instrument bearings. Anyone entering these critical areas must pass through air "showers" which whisk away any last traces of lint or dust. Also utilized are automatic shoe "shiners" which scrape shoe bottoms, brush shoe tops, bottoms and sides. The war against dust and lint extends even to hand drying, which is accomplished with filtered warm air driers to eliminate the possibility of lint transmission from towels.

Picture by courtesy of Spencer-Turbine Co.

Postoffice Department Wins NFPA Award

Postmaster General Arthur E. Summerfield received an award from the National Fire Protection Association for the "Post Office Department's outstanding contribution to public fire safety in 1956."

The presentation was made by Mr. Percy Bugbee, General Manager of the Association. The award resulted from the Post Office Department's first entry in N.F.P.A.'s annual Fire Prevention Contest. This activity in fire prevention by the Post Office Department on a nation-wide basis is the first such formal program in the Department's history. The overall safety program also includes other phases of safety activity such as industrial accident prevention and motor vehicle safety.

In 1956, some of the fire prevention activities of the Department and its thousands of offices over the nation were as follows, Mr. Summerfield pointed out:

1. Extensive participation by all of the more than 37,000 post offices, as well as in District and Regional offices, in National Fire Prevention Week, as proclaimed by President Eisenhower October 7–13, 1956.

2. Issuance to postal personnel of new comprehensive policy designed to aid prevention work in postal installations and to provide a basis for cooperation in community fire prevention work.

3. Many postal employees voluntarily cooperated in community fund raising drives for needed municipal fire protection equipment.

4. Post vehicles were made available for use in parades and other community fire prevention activities.

5. More cooperation than ever before was extended to city and state fire marshals and inspectors in inspection of Federal premises used by the Postal Service.

6. In postal establishments careful planning made possible fire drills and evacuation exercises not considered possible before because of security problems connected with postal receipts, safety of the mails, etc.—and this was done without any sacrifice to security.

7. Fire prevention literature was obtained and made available to the public in post office lobbies. Additional public education was obtained through the display of 40,000 posters in post office lobbies.

8. Large fire prevention posters were displayed on 25 thousand mail trucks.

9. Postmarks reminded millions of citizens that, "Only **you** can prevent forest fires."

"The institution of a major overall fire prevention effort in the postal service for the first time in 1956 represents an effort of which we are particularly proud," Mr. Summerfield commented. "This program not only symbolizes a growing concern in our daily operations for the welfare and safety of our employees, but a growing identification with communities all over the nation in their efforts for the general welfare of all citizens.

Remote control of this 10-ton hoist is provided through two reels. Small trolley permits movement of push button station.

Safety Gets a Lift · · · from Remote Control of Crane

Better materials handling shares the spotlight with increased operator safety in this application of remote control for cranes. Executives were faced with a two-pronged problem of cost reduction and of a traditionally tough, heavy and sometimes hazardous handling job. Here are the results of the program that keeps heavy gauge steel flowing through the shop with a minimum of trouble and expense.

THE PROBLEM: Materials handling costs in the East Coast steel warehouse were very high, too high for comfort. They would be higher still through the contemplated purchase of an expensive cab crane to replace the overhead trolley crane. Something had to be done in order to cut operating costs on these operations without sacrifice to operator safety.

Lack of definite aisles and other general floor conditions required the operator to stay away from the load when in motion. Safe movement of heavy-duty angle iron by their top-running trolley crane, as a consequence, was time consuming.

THE SOLUTION: Due to cost considerations, management of the steel warehouse decided not to purchase a new cab crane. Instead, engineers of the manufacturers of the trolley crane were consulted to solve the difficulties. Remote control of the 5-ton crane, which provided many added safety features for the operator, was suggested. In addition, conversion costs were much lower.

A unique method of suspending the push button station control from the outrigger channel, independent of the trolley, was designed. The desired effect was accomplished through two reels, one on each side of the crane.

In addition, a 4-inch "I" beam was mounted under the outrigger where a small trolley is used to allow for movement of the push button station. For spans of 35 feet or more in length, a reversed catenary curve can be built into the "I" beam to compensate for the pull of the cable reels. This allows the push button station to remain where the operator leaves it and not be pulled to the center of the span.

THE RESULTS: Operator safety records have increased many-fold since installation of this remotely controlled push button station. It is particularly suited for the requirements of the steel warehouse where extremely fast speeds are not required. Accidents have been practically eliminated. It has improved operation and productivity of the crane by at least 50 percent.

Picture by courtesy of Wright Hoist Div., American Chain & Cable Co., Inc.

Basis for Safety
(from page 25)

transferred are carefully examined to see if they are physically qualified for their new duties.

As a foreman teaches the job to a new employee, he points out unavoidable hazards and explains the use of proper safety equipment for that particular job.

The safety manager acts only in an advisory capacity, since he would detract from the foreman in the eyes of the employee by injecting himself into line operations. We believe that safety is a means of management development.

A field engineer (left foreground) briefs chemical engineer, machinist on mask.

In helping "build-up" a foreman, the safety manager gains his respect, but if he interferes in line operations, he loses the foreman's respect and cooperation. There is no neutral ground.

In addition to safety training, the Oxford Paper Co. also places responsibility for safety supervision on the foreman. The foreman must investigate any accidents that do happen and submit detailed reports. This opens his eyes to the failures that contributed to the mishap. In addition, it increases his safety awareness, because a foreman cannot afford to have two accidents from the very same cause.

Respirators and other safety equipment are standard equipment at the paper mill. Representatives of the safety appliances manufacturer frequently visit the plant to instruct personnel in the use of gas masks, oxygen deficiency indicators, and other accident prevention tools.

Before we purchase protective equipment, we first establish that it will be worn. It is false economy to invest in equipment and, later, pay for an injury that occurred because that safety equipment was not being used.

Through use of safety shoes, lost-time toe injuries at the plant dropped from 19 to 1 per year. Should an employee receive a toe injury, the company writes to him pointing-out that he could have avoided much pain, suffering and lost-time by wearing safety shoes. Most employees, who have not previously bought safety shoes, after having one toe injury, immediately purchase them.

We of Oxford believe that safety contests are of very little value to a safety program. It seems to us that safety contests are a temporary expedient, and their effect is reduced as the novelty wears off. Secondly, we can't treat safety as a part of production on the one hand, and then treat it as something separate for purposes of a safety contest on the other hand.

Also, it is possible that several participating departments could be knocked-out of the contest in the first month. Their interest would then be lost and the result could be neglect of safety principles and a lost-time accident.

The intensive safety operation at the Maine paper mill has resulted in greater production, less expense, improved morale and products of higher quality.

We believe that the best way of rewarding employees is by keeping them steadily and gainfully employed with no interruption in the flow of their pay checks because of lost-time accidents.

Pictures by courtesy of Mine Safety Appliances Co.

Hard Hat Saves Life

A recent accident in a large cement plant proves dramatically the value of safety hard hats to industrial workers, according to a report received by the Safety Engineering Department of Industrial Indemnity Company.

This unusual case occurred when a mill worker standing 25 feet away from the point of explosion was showered with hot cement and steam when a pipe exploded. The company was running a ball mill as a dry mill and changed to the raw process while the pipe was still hot. The slurry moving through the hot pipe generated steam causing the explosion.

Although the worker was protected by his clothing, he was burned about the shoulders. Had he not been wearing a hard hat he might have suffered fatal burns about the head.

Value of Compulsory Hat Program

For many years it has been this company's policy to have all its workers wear safety hats as their jobs often take them through dangerous areas. This worker quite possibly owes his life to this existing policy, for as a mill worker his job did not require the protection of a hard hat.

There are still some workers who object to wearing hard hats. One of the complaints is that they feel the hats raise the noise level.

Thomas Soule, Chief Safety Engineer for Industrial Indemnity, recently completed a series of laboratory tests on 14 types of safety hats to determine the amount of reverberation and amplification of noise to the wearer. He revealed that in no case is there an increase in the noise level due to wearing any of the safety hats tested as long as the hat is worn properly. The advances made from the first **papier maché** hard hat to the cool and comfortable present day type is demonstrated by the fact that the majority of workers do prefer to wear these hats on all types of industrial jobs.

Woven Wire Slings

(from page 16)

Naturally, the use of woven wire slings is not confined solely to producers of cold drawn shapes. These slings have found wide application in many other fields of handling such as oil refineries, pipe lines, lumber mills, electric motor repair shops, and so on. Wherever they're used, their advantages of complete flexibility, all-metal construction, wide bearing surface and ease of handling combine to produce safer and faster handling.

Pictures by courtesy of the Cambridge Wire Cloth Co.

Sight Saving Program

A "sight-saving" program which reduced eye injuries in a research laboratory by 75 percent during a period when the laboratory staff increased 40 percent was described by a General Electric Co. safety engineer, Howard H. Fawcett, of the GE Research Laboratory, Schenectady, N. Y., at a meeting of the American Chemical Society.

"'Eye protection' alone is not effective," declared Fawcett during a symposium on safety in the chemical industry. "We have found that the concept of 'sight saving' or 'sight conservation' is much more readily accepted."

In addition to the use of the term "sight saving", the GE Research Laboratory eye-safety effort involves a four-part program: the company tests the vision of the employee and advises him whether he might benefit by further eye examination; if this is the case, the employee is examined by an eye specialist; if corrective lenses are called for, the company obtains safety glasses ground to the required prescription; and an optical specialist, visiting the laboratory on a regular schedule, checks the lenses and adjusts the glasses on the employee, to insure a proper fit. The only part of the program which the employee pays for is the examination by the eye specialist.

The effectiveness of the "sight-saving" program is indicated, Fawcett told the group, not only by the sharp drop in the total number of eye injuries but also by the fact that no lost-time eye injuries occurred at the laboratory between 1951 and 1956. There were also no injuries resulting in any reduction of sight.

Fawcett cited 15 recent cases in which possible eye injury was averted because staff members were wearing safety glasses.

"At least three, and possibly five, would probably have been blinded in both eyes without eye protection," he estimated.

Two off-the-job motor-vehicle accidents involving employees were also cited by Fawcett, who observed that head injury of the employee in each case was greatly reduced because he was wearing safety glasses.

"In our laboratory," said Fawcett, "strict rules on eye protection have not proven practical, due to the tremendous variety of jobs and the relative infrequency with which any particular job is performed. We prefer to place reliance on our employees to recognize hazards and to consult with us on the necessary measures to prevent injury."

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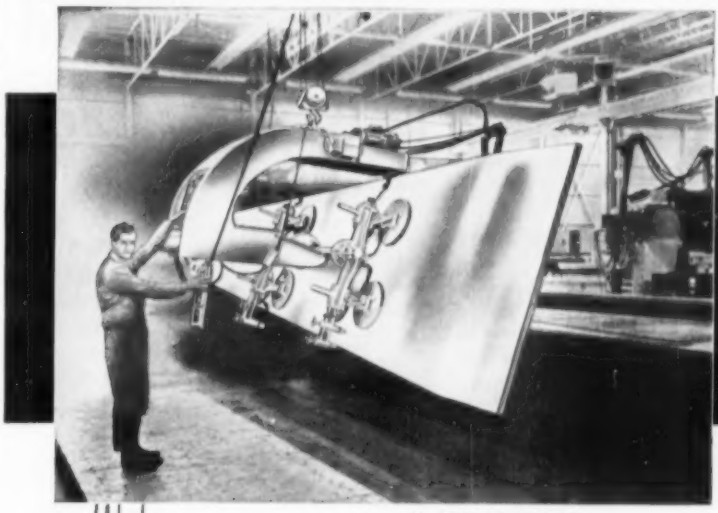

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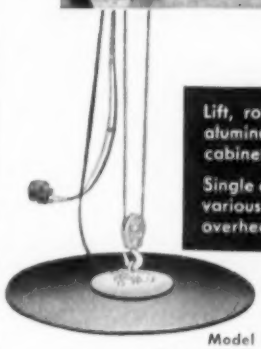

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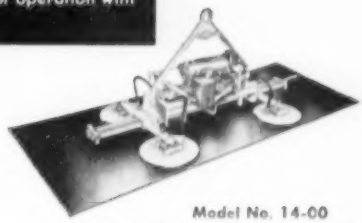

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(For details, use Key # E-11 on card on page 73)

Two awards have been presented by the National Safety Council to the Thermostat Division of Robertshaw-Fulton Controls Co., with plants in Youngwood and Scottdale, Pa. One of the awards was a plaque to the foundry department for having no disabling injuries since July, 1955. The other award was given for the company's reduction of accidents.

• • •

The safety record of Allis-Chalmers' plant for 1956 was the best of any year in the company's history, according to its newly released annual safety report. Frequency and severity rates fell to all-time lows.

The overall company frequency figure for 13 U. S. plants of Allis-Chalmers was 7. The best previous record was 7.3, set in 1954.

The severity figure for 1956 was 264, which is a considerable improvement over the 375 mark established in 1955.

The company made noticeable headway in the accident area concerned with portable hand and power tools and with handling of materials. There was a 54 percent reduction in the "tool" category and a 14 percent drop in material handling accidents.

A factor in the improved safety record at the West Allis plant was extension of the special training course for hitchers. The plant's safety services department also issued a revised manual to guide crane operators and hitchers.

In its efforts to reduce industrial accidents, and thus reduce injuries to people, Allis-Chalmers has been relating safety directly to its production program. In this way, the company integrates safety into its operating procedures. It is felt that good production methods are safe, and safe methods reduce production costs.

• • •

The Dr. Pepper Company in Dallas, along with its subsidiary operations, was a safer place to work throughout 1956, according to year-end reports released by the company last week. Safety records compiled by the company's central safety committee show a reduction of 33 percent in total number of accident for all employees.

There was also a reduction in accident frequency in work areas which normally account for the greatest number of mishaps. Equally important, there was a substantial reduction in accident cost of better than 25 percent. "This is indeed gratifying," stated E. M. Dosser, company vice president and head of the safety program, "because it makes us feel that our efforts to lower our accident rate is producing results."

• • •

Westinghouse Electric Corporation during 1956 chalked up the best employee safety record in the company's history, it was announced by Robert D. Blasier, vice president, industrial relations.

Six of the company's manufacturing plants and 26 manufacturing and repair, or service, locations rolled up a total of more than seven and one-half million man-hours without a disabling injury, thus establishing perfect "no accident" records for the year.

Employees at 13 Westinghouse plant locations passed the one-million man-hour mark without a single lost-time accident. Ten of these plants have already won national awards in recognition of their safety achievements.

Westinghouse employees during 1956 experienced less than two and one-half disabling injuries for each million man-hours worked. This was a drop of eight percent from 1955.

The accident severity rate showed that only 1,936 man-hours were lost for each one million man-hours worked, a reduction of 28 percent from 1955.

The ten Westinghouse plants which won national safety awards for long no-injury records include the transformer division plant, Sharon, Pa.; aviation gas turbine division plant, Kansas City, Mo.; lamp division plants at Little Rock, Ark., and Richmond, Ky.; electronic tube division plant, Elmira, N. Y.; switchgear division plant, East Pittsburgh, Pa.; standard control division plant, Beaver, Pa.; electric appliance division plant at Newark, Ohio; and the Bryant Electric Company, Bridgeport, Conn.

• • •

The Pressed Metals Institute's annual Safety Award was presented to Worcester Pressed Steel Company, Worcester, Massachusetts, at the Institute's Eighth Annual Spring Technical Meeting.

Worcester Pressed Steel Company was chosen for the honor on the basis of its 1956 safety record. During that period, the company had one lost-time accident in nearly 500,000 man hours of work. This is a frequency rate of 2.03.

Mr. Pacek, Personnel Director, in commenting on his company's achievement, pointed out that the National Safety Council's frequency for stamping work is 11. The Pressed Metal Institute frequency for the industry as a whole was 16.94. The Institute is an association of stamping manufacturers with headquarters in Cleveland.

His company's almost perfect safety record was attributed by Mr. Pacek to the activity of a safety committee composed of management and employee representatives.

Last year this committee approved over 120 safety recommendations from all sources. It also held

monthly meetings and inspections in conjunction with an insurance company representative. Formal competitions are also held between departments to stimulate interest in good housekeeping safety.

• • •

A year completely free of lost-time injuries has been observed at the Institute, W. Va., plant of Goodrich-Gulf Chemicals, Inc., during its initial year of production. Approximately a half-million man-hours of safe operation have already been recorded at the plant. Brief ceremonies marking the first anniversary of plant operation included the raising of a new safety flag in front of the administration building.

• • •

Free coffee was the order of the day recently for the Automatic Transportation Company's one thousand employees. The reason: they broke their safety record. Ordinarily, coffee costs 7¢ per cup at machines located throughout the industrial lift truck manufacturing plant in Chicago, but each was equipped with an electric button switch which poured the free cupfuls all day.

The company's old record set in 1955, was 2,417,000 hours without a loss of time accident. The new achievement is also a record for The Yale & Towne Manufacturing Company which owns 14 manufacturing plants in addition to Automatic. The frequency of accidents for the year 1956 at Automatic was only 1.9 compared with 6.6 for manufacturing and service-type industries in the greater Chicago area. The company also held a dinner for its safety committee and supersory personnel—80 in all—in the company cafeteria.

• • •

Dravo Corporation's shipbuilding and repair facilities at Neville Island (Pittsburgh) and Wilmington, Del. were the safest private yards in the country last year. The National Safety Council announced also that Dravo's Machinery Division was receiving an Award of Honor and the corporation and its subsidiaries were receiving an Award of Merit for 1956.

In the Council's marine section contest, the Neville Island yard showed only 1.14 lost-time accidents per million man hours. The smaller Wilmington yard added to its remarkable record of not having a lost-time accident since 1951.

Through March 31 of this year, the Neville Island yards had 1,860,000 consecutive man hours without a lost-time accident. In the light division, the Wilmington yard shared first place with the Pittsburgh & Conneaut Dock Company's yard at Conneaut, Ohio. Wilmington now has had only four lost-time accidents since 1945.

The two yards together received a National Safety Council Award of Merit for their improvement over the previous year's performance. It is interesting to note that Dravo's rate has improved each year since 1953.

G. O. Griffin, director of safety for Dravo, pointed out that Machinery Division's Award of Honor was a tribute to an outstanding safety record in view of the unusual problems in the construction field. The rate of 4.06 lost-time accidents per million man hours was judged against that industry's overall average of 17.84.

• • •

The North Carolina "Driver of the Year" golden trophy was presented by Governor Luther H. Hodges to James C. Wilhelm of Albemarle, a professional truck driver, who has driven for more than 33 years without an accident. A local tank truck driver for the Esso Standard Oil Company, Wilhelm has "racked-up" more than a half-million accident-free miles without even a fender-scratch to mar his record, according to the chairman of the judges, Colonel James R. Smith, Commanding Officer of the State Highway Patrol.

• • •

The Award of Honor of the National Safety Council has been presented to Monsanto Chemical Company for the outstanding safety record set during 1956. The company's 1956 accident frequency rate

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(Use Key # 3-13 on Inquiry Card on page 73)

of .95 major injuries per million manhours was a 27 percent improvement over the 1955 rate of 1.31. It was the first time in the company's history that the safety mark has dropped below the 1.00 mark.

• • •

The S. G. Taylor Chain Company, Inc., of Hammond, Indiana has been awarded the National Safety Council's Award of Honor for the best record in the chain manufacturing industry, 872,000 injury-free man hours from September 22, 1954 to December 31, 1956. As of April 1st the "injury-free" man hours had increased to over 1,100,000.

• • •

Six safety plaques have been won by Lockheed Aircraft California operations in the 1956 Industrial Safety Contest sponsored by the Greater Los Angeles Chapter of the National Safety Council. The contest included some 413 firms, competing in 69 categories. Lockheed Aircraft, Burbank Plants, won both first and second place in the Aircraft Manufacturing category, and first place for Air Terminal operations. Its Maywood Plant won third place in Aircraft Manufacturing Parts—Sub-Assembly in the group of those having between 500 to 999 employees; while its Bakersfield Plant won second place in Aircraft Parts—Sub-Assembly in the category of those plants competing with less than 500 employees.

• • •

The highest award of the National Safety Council has been presented to The Firestone Tire & Rubber Company for the ninth time in recognition of the firm's outstanding safety record during 1956 in all its 42 plants.

J. E. Trainer, executive vice president, said the record means that safety programs are saving lives just as surely as modern medicine.

The company's world-wide accident frequency rate for 1956 was 1.20, a rate of less than two accidents per million man-hours worked. The accident frequency rate was 61 percent below the par rate of 3.11 set by the Council to select recipients of its highest award, and 75 percent below the accident rate for the rubber industry.

The company's accident severity rate was 248, some 47 percent below the council's par of 466 and 51 percent below the industry rate.

In addition to the company-wide award six Firestone plants received the council's individual Award of Honor, seven plants received the Award of Merit, four received the Certificate of Commendation and one received the President's Letter.

• • •

Presentation of B. F. Goodrich Chemical Company's highest safety award—the President's Cup—has been made to the company's Avon Lake (Ohio) Experimental Station. The award is given annually to the plant with the lowest injury frequency rate among the eight plants of the chemical company.

The Experimental Station operated through all of 1956 without a disabling injury. The last lost-time injury occurred in August, 1955; since that time approximately 1,250,000 man-hours have been worked without mishap.

John R. Hoover, BFG Chemical president, presented the cup officially in recent ceremonies at the plant. Recipient of the award as plant representative was Victor Carson, a development operator. It was a serious accident to Carson and another man in 1952 which was largely responsible for the establishment of the compulsory eye protection program the plant now has in practice.

• • •

American Cyanamid Company's Fort Worth, Texas plant has been awarded the Company's Safety Award of Merit. The plant, which manufactures fluid cracking catalysts for the petroleum industry, amassed a total of 519,647 consecutive man-hours without a disabling injury. The safety performance extended from February 12, 1955 to February 28, 1957 and continues.

Accepted Procedure...

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FOOT BATH Alta-Co Powder dissolved in water for group prophylaxis
FLOOR WASH H.D. Fungicide diluted in 300 parts water—mop on floor

Write for Booklet on Athlete's Foot Control

dependable DOLGE WESTPORT, CONNECTICUT

(For details, use Key # E-13 on card on page 73)

Industry Defense

(from page 14)

warning, to uncover weaknesses in planning, co-ordination and communication. Make revisions in your plan as needed.

In general, the function of the plant protective services are: 1. To direct workers to safety—whether to shelters or to safe areas outside the city; 2. to rescue trapped persons; 3. to render first aid; 4. to repair broken and damaged water mains and utility lines; 5. to fight fires; 6. to maintain morale; 7. to prevent panic; 8. to maintain order and discipline; 9. to demolish unsafe structures; 10. to remove debris; 11. to perform such welfare duties as may be necessary, and last 12, but not least, to effect emergency restoration of the plant so production may be resumed.

Responsible for Training

The head of each protective service in your plant is responsible for the individual and collective training of the workers in his organization. Since the resources of all these groups will be utilized in an emergency, it is essential that they consult together in the planning and training stages. Also, it is advisable for an individual trained in one service to receive some training in other services as well.

Teams of each protective service should be trained with teams of the other services to assure proper coordination of activities. Coordination with the local civil defense organization is of special importance.

Agreements Valuable

I cannot overemphasize the importance of also teaming up with other plants in the area for mutual self-help. In many industrial areas agreements have been entered into among and between industrial plants. In many instances joint exercises and drills have been conducted and detailed plans made for use of the facilities, equipment and skills available in the total group.

From an address presented at the 1956 Semi-Annual Meeting of the American Society of Mechanical Engineers. Picture by courtesy of U. S. Army Signal Corps.

thoroughly cleanse chemicals or foreign objects from eyes in precious seconds . . . seconds that may be the difference between permanent injury and good eye-sight! This safety equipment enables workers to self-administer pressure-controlled clear water to afflicted eyes. HAWS *Eye-Wash Fountains* were designed in cooperation with leading Safety Engineers . . . for split-second safety!

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(For details, use Key # E-14 on card on page 73)

Safety Center Offers Graduate Assistantships

The Center for Safety Education at New York University has announced that the stipend for its six annual graduate assistantships has been increased to $2,200 each. Named in honor of deceased safety leaders, the assistantships are offered to candidates for advanced degrees whose professional interests and abilities lie in the fields of safety education and accident prevention.

The Center long has been recognized as the outstanding organization of its kind in the nation and is particularly active in research, safety training, and teacher preparation. Its staff is composed of individuals who have had years of experience in the many aspects of safety, and its publications reflect this fact. By working with the staff, graduate assistants are afforded a unique opportunity to participate in the Center's activities; they may specialize in any one of several areas, including research, teaching, industrial safety, safety in public and private transportation, and administration of safety education programs.

The Center has also announced that three additional graduate assistantships carrying stipends of $2,200 each will be awarded for the 1957–58 academic year. Made possible by a recent grant from the Esso Safety Foundation, the assistantships are for the purpose of preparing persons for leadership in the field of traffic safety.

Under the conditions of the Esso grant, candidates may be accepted from the following states only: Maine, Vermont, Rhode Island, New Hampshire, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, West Virginia, Arkansas, Louisiana, and the District of Columbia. For further details, write to Dr. Herbert J. Stack, Director, Center for Safety Education, New York University, Washington Square, New York 3, New York.

¼ of Accidents from Defective Vehicles

Safety leaders believe that as many as 2,500,000 of the nation's reported annual crop of ten million traffic accidents may be directly or indirectly caused by defective vehicles, the Association of Casualty and Surety Companies and the American Association of Motor Vehicle Administrators has reported.

In a booklet on periodic motor vehicle inspection, which has just been released by the two groups, they report that:

"Persons with long experience in this field believe strongly that if all the facts were known we would find that nearly one-fourth of all vehicle accidents are directly or indirectly caused by defective mechanical or electrical vehicle equipment. When it is found from official reports that over one-half of all vehicles inspected fail to pass the basic tests, it is not unreasonable to suspect that they may be right."

The booklet adds that at the present time 14 states, registering about 25 percent of the nation's vehicles, have statewide inspection programs. Official reports from these states show that over one-half of all vehicles fail to pass the basic tests. The percentage of older cars unable to pass inspection runs as high as 85 percent.

More surprisingly, records show that the percentage of new cars rejected in semi-annual inspections ranges as high as 45 percent. "It is a recorded fact," the booklet says, "that many new cars have defects in brakes, lights and steering mechanism which could jeopardize the safety of their operators and others on the highway."

Notes 32 Percent Drop

The booklet contains reports of excellent results obtained in some states. "During the first year of inspection in the state of New Jersey," it says, "there was a 32 percent drop in traffic fatalities. Texas recorded 15 percent of its accidents due to vehicle defects, but after inspection started, the percentage dropped to five percent. In Utah, defects caused 15 percent of fatalities before inspection, three percent after."

Turning to other considerations, the booklet points out that periodic inspection saves motorists money, as well as lives. "Inspection," it says, "helps maintain automobiles at a higher value level by lessening depreciation, and demonstrates to motorists that it is less expensive to have regular checkups than to wait until mechanical breakdowns occur. Used cars from 'inspection' states often have higher resale value than do equivalent models elsewhere."

Effect of Inspection

In all, the booklet contains information on how inspection can reduce accidents, how it is financed, what should be inspected and where to get detailed information on the subject. Reasonable quantities of the publication are available free from the Accident Prevention Department, Association of Casualty and Surety Companies, 60 John Street, New York 38, New York.

Excellent opportunity for

SAFETY ENGINEER

Rapidly expanding electronic research and development corporation has an opening for a competent Safety Engineer, age 35 to 45. The position requires a Bachelor Degree, preferably in the engineering field. Must have 5 years experience as a safety engineer and be familiar with California Workmen's Compensation laws. Familiarity with electronics and high voltage electrical problems is preferred. Please send resume of background and salary to:

Mr. Glen Browne

The Ramo-Wooldridge Corporation

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Safety & Human Values

The safety movement in American industry typifies American regard for human values, J. Sharp Queener, manager of the Du Pont Company's Safety and Fire Protection Division, told the twentieth annual Tennessee Industrial Personnel Conference.

"Industry's concern for the health and well-being of its employees, as exemplified in the safety movement," Mr. Queener said, "is an expression of the values which have come to real significance in the business world. Attention to safety typifies the industrial embodiment of western culture with its emphasis on the dignity of the individual and the importance of human relationships.

"Our approach is the direct opposite of the attitudes reflected in the indifference of other societies which maintain a fatalistic aloofness toward the human being. In the Soviet Union, for example, indifference to human suffering is shocking when evaluated by our own standards."

"While the individual employee must accept his own responsibility for safety," Mr. Queener said, "management cannot and must not shift or subrogate its responsibility for the prevention of injuries which is inherently a management duty and obligation. The cooperation and participation of all employees in the safety program is essential but the final responsibility is management's."

With respect to the broad picture of traffic safety, he said that the line of authority is not so easily defined. He cited efforts by the President of the United States and state and municipal officials to promote traffic safety, adding, "while there is no chain of command, such as we find in the industrial establishment, traffic safety is being given top attention. In the final analysis the 'top' in traffic safety rests with each one of us since we are both pedestrians and drivers."

He suggested that good citizenship is an important element in traffic safety, "because it involves the feeling that people have for each other, the taken-for-granted obligation to be vigilant for the wel-

(Continued on page 56)

SILICOSIS—Employer's Negligence Immaterial

An employer denied a charge of negligence in the case of a worker who contracted silicosis and later tuberculosis due to an exposure which might have been avoided by installation of fans. The fact of his negligence was declared immaterial because it was definitely proven that the employee contracted silicosis in the employ of the employer, and the employer was therefore liable on that count.

Scroggs vs. American Stove Co. (1944) 142 F. 2d 297.

DERMATITIS—Disability Benefits

A woolen mill spinner contracted dermatitis in the course of her employment with the defendant. Disability benefits were awarded for a period of one year during which time the claimant attempted to resume her employment with the defendant but sustained a recurrence of the disability. The court concluded that the claimant should find employment in another plant and that no further benefits would be granted until the outcome of the subsequent employment was determined.

Zeady vs. Arms Textile Manufacturing Co. (1950) 76 A. 2d 512.

DERMATITIS—Two Hazards

In the case of a worker who was exposed to both mercury and wood alcohol, an award for dermatitis based on a finding of "occupational disease due to contacting mercury and/or wood alcohol" was appealed from by the employer on the ground that one of the diseases was not specified. However, the judgment of the commission was considered valid and the award affirmed.

Kvernstoen vs. Nelson (1942) 2 N.W. 2d 560.

SILICO-TUBERCULOSIS

In an action for damages for the wrongful death of an employee from silico-tuberculosis, the result of continued exposure to silica dust in the course of employment, an award was made. The fact that the employer allegedly did not know that the breathing of air in its plant would foment silicosis did not relieve him of liability.

N. O. Nelson Manufacturing Corp. vs. Dickson (1944) 53 N.E. 2d 640.

Edited by HENRY M. GROSMAN
Counselor at Law, Newark, N. J.

MEMBER . . . . . Master Superior Court, New Jersey American Bar Ass'n, New Jersey Bar Ass'n, Chairman, Committee on Workmen's Compensation, New Jersey Bar Ass'n National Federation Insurance Counsel Past Commander, American Legion, Post 10, ... Newark, N. J.

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LOOK FOR THE PAX ROOSTER—OVER THIRTY YEARS OF SERVICE TO INDUSTRY

(Use Key # E-16 on Inquiry Card on page 72)

Vehicle Fleet Safety

The key to safer and more profitable motor vehicle fleet operations, according to a booklet just published by the Association of Casualty and Surety Companies, is a control program administered by fleet safety supervisors in which management cooperation and the effective control of drivers and equipment are the three vital elements.

Thomas N. Boate, Manager of the Association's Accident Prevention Department, said that the booklet, entitled "A Control Program for Motor Vehicle Fleets," is the first complete outline ever prepared telling how to inaugurate and administer fleet safety control programs.

"Proper consideration for the selection, scheduling, routing and maintenance of equipment, and supervision of drivers," the booklet says, "will result in a smooth, well-knit operation and achievement of management's goals, ultimately expressed in profits.

"A breakdown in any one of these points as outlined will produce undesirable results in terms of delays, friction, accidents, damaged equipment and cargo, poor morale, customer complaints and high operating costs."

In addition, the booklet includes sections on a review of basic control factors, the selection—and the training—of drivers, locating operational problems, accident studies, operations studies, developing corrective actions, putting the control program into effect and evaluating it.

The two-color booklet is crisply written and has been illustrated by one of the nation's leading cartoonists. Mr. Boate said that it is intended for use as a handbook in the fleet supervisor courses held across the nation each year by colleges and universities in cooperation with the National Committee for Motor Vehicle Fleet Supervisor Training, of which the Association is a member.

All distribution of the booklet will be made through the Association's home office or member companies, Mr. Boate said. He added that those interested in getting complimentary copies of the booklet for use in approved courses should write to the Accident Prevention Department, Association of Casualty and Surety Companies, 60 John Street, New York 38, New York.

Industrial Standards

In "Standards Are Everybody's Business," thirty-three industrial leaders, scientists and engineers discuss the vital role of standards in major industries of the United States. These papers were presented at the Seventh National Conference on Standards, held in New York City last fall, in conjunction with the Thirty-Eighth Annual Meeting of the American Standards Association.

Well-known authorities discuss prevalent problems in the utilization of nuclear energy in industrial processes, explaining how nationally-coordinated standards can help industry make full use of this power. Other sessions present the case for national standards in the chemical, steel and gas industries; how standards effect savings at the company level; standards for screw threads; and standards to prevent death and destruction.

The 103-page publication contains photographs made during each of the sessions, and citations and remarks on the two gold medalists selected by ASA for 1956. The proceedings may be obtained from DED-3, American Standards Association, 70 East 45 Street, New York 17, N. Y., at $4.00 a copy.

American Worker's Fact Book

"The American Worker's Fact Book," a 450-page volume of background information on labor matters, is being published by the U. S. Department of Labor. It is the first compilation of such comprehensive coverage ever published by the Government in the labor field.

The book is intended, Secretary of Labor James P. Mitchell announced, as a simplified source of information for persons interested in labor matters. It is written in plain language, avoiding technical wording and complicated statistics so as to be more useful to the lay reader.

It is expected that the book will be particularly useful to labor leaders, businessmen, legislators, and to high school and college students as a primary reference.

The work includes 138 topics grouped under a few major headings, with cross references. Included among the topics are discussions of the size and characteristics of the labor force, an analysis of the labor market, and data on unemployment. There is a section on the relationship of earnings, living standards, and the Nation's productivity.

The employment problems of older workers, the physically handicapped youth, and other segments of the labor force are covered in special chapters. The book also deals with labor legislation, job and old age security, labor-management relations and collective bargaining, the role of unions, international labor relations, the relation between government and worker, and many other topics.

Nearly 100 tables and charts are included and chapter headings are illustrated with line drawings. The book may be purchased for $1.50 from the Government Printing Office.

Who Has Accidents?

The driver who repeatedly turns up in traffic court is generally more impulsive, less reflective, and less discriminating in his social relationships than the driver whose record shows no violations or accidents. The "repeater" also is more likely to be young, unmarried, and a job-changer.

These observations are made in a recently completed doctoral dissertation by Earl D. Heath, member of the staff of New York University's Center for Safety Education. The dissertation is based on his two-year statistical study that covered the psychological characteristics and personal backgrounds of nearly 1,000 drivers—763 repeated offenders and 195 non-offenders.

Using the standardized Thurstone Temperament Schedule that rates subjects on seven scales (active, vigorous, impulsive, dominant, stable, sociable, and reflective), Dr. Heath found three significant areas of difference. The offender group scored higher on both the "impulsive" and "sociable" scales. This indicates, according to the Thurstone definition, a person who is carefree, acts on the spur of the moment, makes acquaintances easily, and is sympathetic, cooperative, and agreeable.

The non-offender group scored higher on the "reflective" scale. According to the Thurstone definition, such persons are meditative and enjoy work that requires accuracy and fine detail.

After studying biographical data on the drivers, Dr. Heath drew a composite picture of the offenders. Significant details of this composite include: (1) being in the 18–25 age group, (2) being single, (3) having more than one job in the past five years, and (4) being discharged from past jobs.

Dr. Heath, whose study was conducted with the cooperation of the New Jersey Division of Motor Vehicles, believes that his results will be particularly useful to states setting up driver improvement clinics (New Jersey, which established such a clinic in 1952, now has four of them, and New York is developing one now), and to industry and commercial fleets organizing driver employment programs and driver education and re-education courses.

"We don't yet have enough evidence to recommend licensing or selection of drivers on the basis of such tests alone," Dr. Heath said, "but the tests and personal histories do tend to show the group that needs more attention before selection."

As a separate part of the study, Dr. Heath examined the records of truck drivers and professional chauffeurs who drive three to five times as many miles each year as the average driver. He found that the greater the mileage driven, the worse the record of violations per mile. However, this group managed to avoid accidents better than problem drivers in the average mileage group.

Abstracts of Dr. Heath's report will be available at the Center for Safety Education, New York University, New York 3, New York.

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YOU NEED . . .
DUPOR No. 40
The respirator whose 40 sq. in. double filters provide double protection against pneumoconiosis and silicosis producing dusts. Double comfort in breathing, too! Light, less than 5 ounces—compact—sturdily constructed. U. S. Bureau of Mines approved. Order sample today, $3.00 postpaid.
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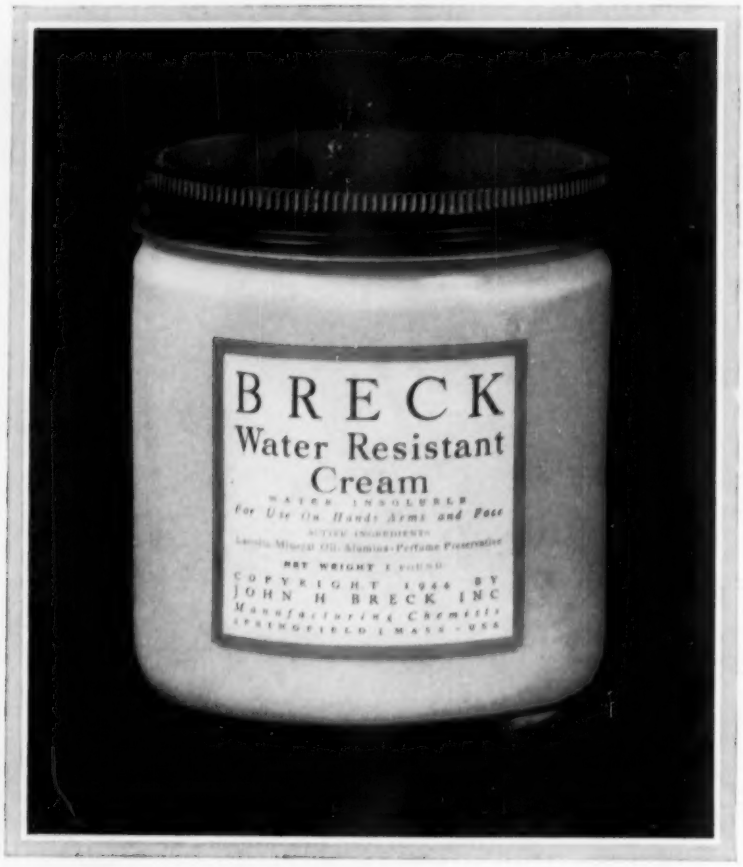

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Breck Water Resistant Cream, when applied to the skin, forms a protective film which is resistant to the action of water and water solutions. It spreads easily, leaving a protective film which is not slippery, sticky or "heavy" Breck Water Resistant Cream is recommended for the industrial and professional worker whose skin is frequently in contact with water and water solutions, such as liquid coolants, emulsified cutting oils, mist and spray from alkali baths and plating solutions, flux fumes, cement and lime. An application of Breck Water Resistant Cream is effective for three to four hours.

A Breck Industrial Preparations Booklet will be forwarded to you upon request.

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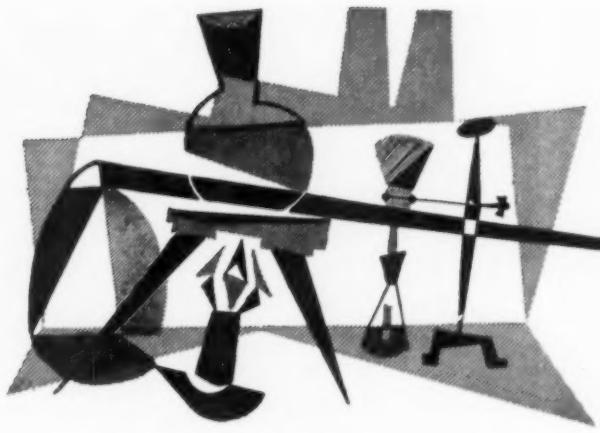

industrial hygiene

Edited in cooperation with
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Public Health Meeting

Public health authorities representing community, state, national and international agencies, both voluntary and governmental, will exchange information on a wide variety of topics at the 85th annual meeting of the American Public Health Association in Cleveland, November 11 to 15.

More than 40 related organizations will hold simultaneous meetings. A total attendance of 4,500 is expected, according to Dr. Reginald M. Atwater, executive director of the association with headquarters at 1790 Broadway, New York.

Dr. Atwater announced preliminary plans for a program "which reflects the constantly broadening role of the health professions and public health agencies."

"Every new bit of knowledge unearthed by medical research may have a bearing on the practice of preventive medicine and the building of a more healthful environment," Dr. Atwater said. "At the same time, our changing pattern of living and our dynamic technology constantly pose new health threats for individuals, families, and communities. As a result, we now find such topics as peacetime uses of atomic energy and prevention of accidents on the highways demanding the close attention of a professional society which originally was concerned with basic sanitation and the curbing of infectious disease."

Each of the Association's fourteen specialized sections will hold meetings devoted to administrative and technical developments.

Other sessions will deal with topics which cut across several specialties. Among such topics are the quality of medical care, health services for industrial workers, medical care for the mentally ill, community health services for children, weight control in growth and development, mental health and the school-age child, international environmental health, health problems of the aging population, epidemiology of accidents, water fluoridation, air pollution, health aspects of housing and commmunity mental health.

Industry Must Prove Safety of New Materials

New materials being developed by industry sometimes aggravate allergies and cause other irritations which must be solved before useful products can be developed from them, an Akron rubber executive said in Columbus, Ohio recently.

W. E. McCormick, director of industrial hygiene and toxicology for The B. F. Goodrich Company, told the Ohio Safety Conference that "the physiological effects of newly developed materials are usually known by the toxicologist before workers are exposed to danger, but safe handling procedures must be hurriedly developed to guarantee a full degree of safety.

"Through animal experimentation, the industrial hygienist must develop the necessary information about new materials to set up plant control procedures. Until every known reaction to a new material has been explored, the toxicologist does not risk human exposure," McCormick said.

He told the Ohio safety group about the physiological effects of numerous materials that have come into industrial use in recent years. He also pointed out that ozone, the material that is present in smog, is a highly toxic substance. "Exercise by the individual increases the toxic effects of ozone, while pre-exposure appears to develop a marked tolerance. Ozone's toxic effects are greatly enhanced under conditions of reduced atmospheric pressure."

How to Handle Respiratory Emergencies

•

Reduce Injuries by . . .

Detection

Protection

Treatment

DETECTION—Leaks can be costly and dangerous in the petroleum industry. Worker checking for a break is protected by mask from inhalation of harmful fumes.

by **JOHN B. DUNNE,** Sales Manager
Medical & Hospital Department
Globe Industries, Inc., Dayton, Ohio

Fear is a double-edged emotion. It can be a disruptive, depressing, overpowering force. On the other hand, it can be a productive, protective, constructive force. When fear is harnessed it exerts a great energy for good. Unreasoning, unbridled fear often results in destruction. Properly used, fear can be used to prevent accidents and save lives.

For several years educators tried the noble experiment of using only positive teaching in accident prevention. Thus we were told to "Always drive safely," instead of "Don't be a reckless driver." Or our children were told, "Wait an hour after eating before going in the water," instead of, "Don't swim right after eating." The positive method of teaching has a place in safety education, as in other fields, but nothing alerts a man to danger like fear. Thus we can use fear as an ally in making a person conscious of hazards.

How can we harness fear and make it a weapon against accidents? As an example, let's take a closer look at the oil producing field. Oilmen may say, "Our men have to be tough; they can't be afraid." But my answer is that a man can be the toughest roustabout, or the roughest tool dresser on the rig, and yet he can have a deeply ingrained respect for the hazards of his job—because he knows WHAT to fear. It won't make him any less effective and he will probably live a lot longer.

One of the problems of petroleum production is the accident resulting in stoppage of breathing or asphyxia. The hazards are chiefiy hydrogen sulphide, carbon monoxide, and electric shock. Of course in refining and storage operations there are additional asphyxia hazards such as oxygen deficiency and inhalation of volatile hydro-carbons.

To deal properly with these hazards we must rely on the "Triad of Safety," **Detection, Protection** and

PROTECTION—Training and retraining in use of masks plays big part in saving of lives. These men review fundamentals of using a demand air mask effectively.

TREATMENT—Immediate treatment of carbon monoxide or hydrogen sulphide victims by medical or by first aid personnel may mean difference between life and death.

Treatment of Asphyxia from:

1—Hydrogen Sulphide
2—Carbon Monoxide
3—Electric Shock

Treatment. A well developed safety program cannot overlook any of the three.

DETECTION: The ideal way to prevent respiratory emergencies is to detect the causes at the source. Instruments now available permit the safety engineer or industrial hygienist to detect carbon monoxide, hydrogen sulphide and other harmful gases down to three or four parts per million. This equipment is portable and its use is only common sense. Routine checks with these instruments will determine the presence of both these potential killers. The men can be alerted to the danger and protective measures can be taken.

In the case of carbon monoxide the detectors will show the need to ventilate a garage or other area where internal combustion engines are used. Of course these instruments are most useful to determine leaks and give early warning of the presence of toxic atmospheres. They scarcely can be expected to predict a fulminating escape of gas. It is, however, usually safe to assume that where there are traces of gases there is the chance that larger amounts may be present later. Detection, therefore, is of utmost importance in petroleum producing as well as in every other industry. It should be part of every far reaching safety or industrial hygiene program.

PROTECTION: Great advances have been made in this department of the "Triad of Safety" in the past ten years. Whereas workers used to depend on the protection of filter type masks, they now can rely on air-supplied or self-contained air or oxygen masks and work in safety. Since these units are independent of the surrounding atmosphere, men can go into a very toxic environment or one completely devoid of oxygen and perform their duties with complete confidence. The use of these masks also makes possible the immediate rescue of victims who have been overcome by gas or fumes of any sort. While much work has been done to educate the men to use this equipment, a lot more can be done. If there is any doubt in the mind of a foreman about the presence of gas, he must be educated to insist on the men donning protective equipment to do a job. This is an example of turning fear to good advantage.

Selection of the proper type breathing apparatus for various jobs will make the task of teaching the use of this equipment easier. The traditional half-hour demand apparatus is ideal for many jobs. But the use of a half-hour apparatus which weights over thirty pounds is not justified for a short inspection job. By the same token, where he has to work in a toxic atmosphere for several hours the worker needs more than a half-hour apparatus.

Supervisors and safety personnel in the oil producing business must analyze the jobs and fit the mask to the work to which it is best suited. It is incumbent on the mask manufacturer to put a variety of masks best suited to specific jobs at the disposal of the industry. These manufacturers must give thought to the comfort of the mask, proper distribution of weight, greater safety for the mask wearer and a continuing development program for improvement of this equipment. Thus the men in the oil producing industry and the manufacturers can jointly contribute much to a better mask program. Education and development can go hand in hand to prevent accidents and aid production.

TREATMENT: Not all those persons exposed to hydrogen suphide, carbon monoxide or electric shock are non-breathing. They all share the common need of good lung ventilation. If they have stopped breathing, this ventilation must be carried on for some time either by manual or automatic artificial respiration.

Hydrogen Sulphide

Twenty parts per million is the approximate permissible concentration of hydrogen sulphide in the working atmosphere. Think of that carefully: only twenty parts of this gas in a million parts of air!

SYMPTOMS: Larger concentrations can be expected to produce symptoms as follows: Pains in the eyes, nose and throat, coughing, irritation of the conjunctiva of the eyes, shortness of breath, contracted pupils, convulsions, paralysis, pulmonary edema, laryngospasm, death. All too often, the last mentioned symptom is the result of exposure to this deadly gas. The actual mechanics of death are not always the same. Some may die from a spasm of the larynx. This prohibits air from entering the bronchial tubes and lungs and the victim suffocates. The cause may be the onset of pulmonary edema in which fluid seeps through the walls of the lung cells and gradually displaces the air. Thus as one doctor aptly put it, "We drown in our own juice."

You may ask, "How is it possible for a gas or fumes to act so quickly to bring so much damage?" This is a sensible question because many victims of hydrogen sulphide die within minutes. The question can best be answered by asking you to look inside the chest at our breathing organs.

The lungs are supplied through a fairly large pipe, the trachea, or windpipe, which goes into the bronchus. This tube branches into two large tubes and then into many, many smaller tubes called, bronchioles. These supply 5½ million lung cells called alveoli. If, then, you think of these little air sacs with walls delicate enough to allow oxygen to pass through on inhalation and carbon dioxide to pass through during exhalation, you have some comprehension of what can happen when a load of searing, irritating gas enters these organs. Everyone has seen a blister form when you burn your finger. Well, the release of fluid or plasma takes place even more rapidly when the lungs are affected, because it can get through the walls of the cells quickly. Thus fluid enters the spaces and breathing becomes more and more labored and if help is not forthcoming the patient may die.

In the case of laryngospasm, the larynx closes down due to spasm, and air cannot pass through. This may protect the lungs from further entry of the gas or fumes, but it will also suffocate the person. An airway must be established quickly in these cases or death will ensue in a matter of three to five minutes.

TREATMENT: The treatment of hydrogen sulphide cases therefore consists of rapid removal of patients from the contaminated area. If they are not breathing, the standard technique of artificial respiration should be applied at once. Someone should procure a resuscitator which can be operated on intermittent positive pressure. The application of oxygen under positive pressure will tend to inhibit the flow of fluid into the lungs and, if the patient is not breathing, the instrument will breathe for him. If spasm of the larynx is suspected, an airway should be inserted and the head pulled far back to attempt opening of the air passage. Artificial respiration with the resuscitator should be continued until normal breathing is resumed. If a doctor is available, summon him at once.

Many persons who have been exposed to hydrogen sulphide may still be conscious and breathing with difficulty. They are often apprehensive and usually experience difficulty in breathing. The use of intermittent positive pressure oxygen will assist them to return to normal breathing. It should be continued until they are put under medical care. The instrument used to administer the oxygen should be capable of adjustment. Usually about half the maximum positive pressure is tolerated best by these patients. Never use negative pressure on them. The suction will cause more fluid to perfuse through the walls of the lung cells and complicate the pulmonary adema further. On the other hand the positive pressure will constitute a pneumatic dam to impede further passage of the fluid into the intra-pulmonary spaces.

The effectiveness of the intermittent positive pressure oxygen treatment has been borne out in chemical plants where a large exposure to hydrogen sulphide exists. These plants have installed multiple outlet manifolds in their dispensaries where as many as six patients can be treated simultaneously. Six resuscitator valves capable of operating on intermittent positive pressure are attached to this manifold. The oxygen is supplied from a bank of cylinders outside the dispensary. Where the exposure is not so great, portable units will suffice.

Remember, rapid, efficient treatment of the cases often spells the difference between life and death.

Carbon Monoxide Inhalation

Carbon Monoxide is probably the most insidious killer among all gases. The fact that it is colorless, odorless and tasteless makes its detection by our senses practically impossible. Combustion of any kind within an enclosed area usually produces CO. Workers have to be instructed about the dangers of unvented gas heaters, coal stoves with improper flues, running gasoline motors inside, and all the other precautions necessary to make them aware of the dangers of this gas. Here, **the fear** of this stealthy murderer will alert the person to danger better than any other technique. Even then constant vigilance by supervisory personnel is a must to prevent a tragedy. The winter is the worst time for these cases because areas are sealed against the cold and ventilation is impaired.

SYMPTOMS: The victim usually experiences a feeling of extreme fatigue with an overpowering tendency to yawn. A headache, quite severe and rapid in onset, may strike the front of the head. Dizziness and nausea are often present. Unconsciousness follows and then stoppage of breathing. The color of the victim of CO inhalation may be cherry red due to the change in the hemoglobin of the blood. This often misleads onlookers into thinking he is well oxygenated. Death will follow if he is not given artificial respiration soon.

TREATMENT: The patient should be removed from the gaseous atmosphere immediately but **not exposed to cold:** Manual artificial respiration should be started at once. When available, a resuscitator should be used and high concentrations of oxygen administered. Oxygen should be continued even after the victim is breathing normally to assist in disassociating the carbon monoxide from the blood stream. The patient should be put under a doctor's care as soon as possible and should be kept lying down to protect his already overtaxed heart.

Electric Shock

Shock from electricity may be brought on by contacts with a manufactured electricity source or by being struck by lightning. Voltage, amperage, duration of contact and type of ground all play their part in the seriousness of the case. The damage may be due to current passing through the brain, or through the heart, or it may be that the convulsive effect of the shock paralyzes the muscles of respiration.

SYMPTOMS: Victim is usually unconscious and not breathing. Burns are often apparent or may be present under the flesh. The body is often rigid and boardlike and the color of the patient is blue.

Immediate removal from the electric current is necessary and this should be done so as not to endanger the rescuer. A dry board, heavy rubber gloves, dry woolen blanket can be used to pull the patient away.

A common symptom of electric shock which cannot be detected by the first aider or rescue worker is ventricular fibrillation. This means that the muscle fibres in the ventricles of the heart are not working in unison and thus the heart cannot pump blood. Much work has been done by medical investigators to develop a defibrillating device which can be applied to the outside of the patient to get the heart back to its normal function.

TREATMENT: Artificial respiration is often difficult to administer manually because of the body rigidity but should be attempted at once. A reliable resuscitator should be used if available as this will ventilate the patient through a mask and not rely on movement of the chest wall. Keep the patient warm and summon a physician at once. When breathing and consciousness are restored he should be kept lying down and not permitted to exert himself.

Conclusions

Impress upon the workers the danger inherent in their work. Acquaint them with the consequences of asphyxiating accidents. Then use their fear as a constructive force to prevent accidents.

Acquaint them with the consequences of exposure to hydrogen suphide, carbon monoxide and electric shock. And then be sure that all possible steps are taken by management to eliminate the hazards. Employ the "Triad of Safety," detection, protection and treatment. Proper application of the first two elements of the triad will lessen the need for the third and there will be fewer respiratory emergencies in the petroleum producing industry.

From an address presented at the meeting of the Oilwell Drillers Association. Pictures by courtesy of Globe Industries, Inc.

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(For details, use Key # E-19 on card on page 73)

clean up your exhaust fumes!

Limestone Mine
(Below)

In switching from open-air quarrying to underground mining, the Coplay Cement Mfg. Co., Coplay, Pa., was faced with a huge investment in special equipment and the problem of dangerous fumes from the powered equipment. By using catalytic purifiers, they were able to convert some of their present equipment to safe underground operations: a dieseler purifier for a diesel-powered tractor-shovel and OCM units for two gasoline-powered trucks. The catalytic exhausts permitted Coplay to operate the equipment inside the mine for long hours at a stretch while holding carbon monoxide concentration well under the Bureau of Mines' allowable maximum. The company also purchased a new tractor-shovel and equipped it with a dieseler (the box-like device shown on top of the engine). Coplay estimates that the catalytic units have saved thousands of dollars in new expenditures.

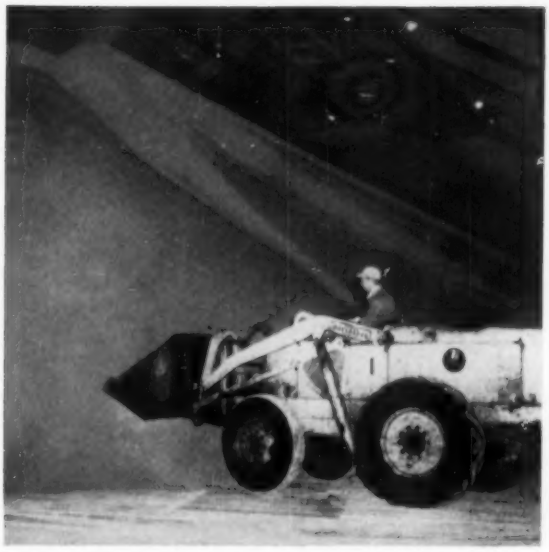
Carbon monoxide poisoning is a constant source of danger when operating internal combustion engines inside buildings or underground. Safety directors in industrial plants, mines and construction projects are finding, however, that they can use equipment powered by these engines with no danger provided the regular acoustical muffler is replaced with a catalytic exhaust purifier.

These purifiers are of three types: the catalytic purifier for engines fueled with white (unleaded) gasoline or LP-gas, the oxy-muffler for engines fueled with leaded gas and the diesler for diesel engines. All three eliminate carbon monoxide, hydrocarbons and other contaminants in the exhaust by oxidizing them to harmless carbon dioxide and water vapor.

Use of the catalytic purifiers widens the application of equipment powered with internal combustion engines by removing the limitations on operation indoors or underground. Consequently, safety engineers can okay the use of whatever equipment is best suited to the job regardless of the power source. Greater efficiency and economy in materials handling and maintenance result, as illustrated by the pictures and captions here and on the next pages.

These examples have been selected because of their variety and because they show how the catalytic purifiers solve basic problems. In every case the catalytic unit was easily installed and costs a fraction of what it would cost to install other types of equipment or a higher capacity ventilating system.

Pictures by courtesy of Oxy-Catalyst, Inc.



Chemical Plant
(Above)

Materials handled at Allied Chemical & Dye Corporation's Nitrogen Division plant in Hopewell, Va., include both bulk materials and filled and empty bags. After some study, the Materials Handling Section decided that the most efficient equipment for the two jobs would be tractor-shovels for the bulk materials and fork trucks for the bags. Gasoline power was preferred because of economy and versatility of operation. But safety was also a necessary consideration, and the plant safety engineers approved the equipment for use in the storage buildings and warehouses only after they were equipped with catalytic purifiers to remove harmful gases from the exhaust. In the photograph one of the units is gathering a scoopful of bulk fertilizer from the storage floor; it will then carry the material to the elevator hopper.

Steel Mill
(Below)

At its modern Fairless Works on the Delaware River, United States Steel Corp. removes ore from the holds of ships with two huge trolley-type ore unloaders. These unloaders can't operate effectively when the ore begins to thin out at the bottom of the hold—unless the ore is gathered into piles. Engineers decided that a grading unit with a telescoping boom was the best machine for pulling ore in from the sides of the holds, and that rubber-tread tractor-shovels (shown on the dock) would prove most efficient for cleaning up floors without damaging the planking. The plant's safety bureau recommended installation of catalytic purifiers on the mobile equipment to prevent toxic concentrations of carbon monoxide in the ships' holds. Two of the tractor-shovels have operated continuously as long as five hours in one hold without ill effects to the operator. The catalytic purifier is box-like unit in upper picture.

Cellulose and Paper Converter
(Left)

When Cellulose and Paper Converting Co. moved into its new one-story plant and warehouse in Philadelphia, it found that the building was well laid out for fork-truck handling. It bought a gasoline-powered truck primarily because of low initial cost. From a performance standpoint, the truck left little to be desired. However, gas fumes tended to concentrate because of insufficient ventilation, and soon there were numerous complaints about sick headaches in areas where the truck operated. The truck dealer recommended installation of a catalytic purifier. When this was done, the headaches immediately disappeared. Although the truck is operated indoors continuously for six hours each day, there are no perceptible effects on the workmen from the engine exhaust.

Tunnel Construction
(Right)

Lipsett, Inc., general contractor for the Lehigh tunnel on the Pennsylvania Turnpike Northeast Extension, wanted to use its gasoline-powered concrete mixers inside the tunnel. There was one drawback: the possibility of carbon monoxide fumes from the engine exhaust. They converted the mixers to LP-gas and installed catalytic purifiers, but the Industrial Board of the State's Department of Labor & Industry required that tests be made. Tests by the Bureau of Standards, shown in the picture, proved that the monoxide content was well below the maximum allowed. The close-up shows purifier under running board.

Food Processor

(Left)

The problem faced by Pillsbury Mills, Inc., in the Downington, Pa., plant of its Refrigerated Food Division, is a fairly steep ramp from near the cold storage room entrance up to the loading platform. They decided that only a gasoline or LP-powered fork truck could provide the reserve power needed to negotiate the ramp. But since the truck is operated inside the cold storage room, which is kept tightly closed, without natural ventilation, the danger from carbon monoxide fumes is very real. Pillsbury solved the problem by purchasing an LP-gas powered truck (which produces less carbon monoxide than a similar gasoline powered truck) and then equipping it with a catalytic purifier.

Plant Maintenance Machines

(Left)

Plant officials of the Yorklyn, Del., plant of National Vulcanized Fibre Co. investigated possible savings of using power sweepers for plant maintenance instead of time-consuming manual methods. Their investigations indicated that gasoline-powered vacuum sweepers would be the most satisfactory for their particular conditions, but they were concerned about monoxide fumes from the engine exhausts. They asked the manufacturer to install catalytic exhausts on the sweepers before shipment. The purifiers remove monoxide and other contaminants from the exhaust and permit operation of the units anywhere in the mills. Now floors can be swept in less than half the time.

SAVE YOUR SKIN...

Clean UP...Even Without Water

In the recent extensive "Evaluation Of Waterless Hand Cleaners," *just released by the United States Department of Commerce, Office of Technical Services, Washington 25, D. C. only one among the 15 hand cleaners tested was pronounced "Superior" and singled out for over-all praise by the researchers.

This report was prepared by Dr. Donald J. Birmingham and Vernon B. Perone, United States Public Health Service, under contract for the Aero Medical Laboratory, Directorate of Research, Wright Air Development Center, Air Research and Development Command, United States Air Force.

This "superior" cleaner, coded as "G-7" in the report, is the product of a leading manufacturer in the skin cleansing field. The company has applied its 30 years of industrial skin care experience and extensive research facilities to the problem of overcoming the principal objections industrial users had leveled at old style waterless cleaners.

Classed as the "wetting agent and mild solvent type" by the government report, the pharmaceutical grade waterless skin cleaner was specifically created to give speed in cleaning combined with unusual mildness to the hands and outstanding skin conditioning and protecting characteristics.

Although a number of other waterless cleaners listed in the report reached as high as the "Satisfactory" classification, this one product was singled out for its cleaning properties and safety features in the over-all performance rating.

Another unusual feature of this waterless skin cleaner is that it may, should the user desire, be rinsed with water after use. Because of this feature, workers will not raise the familiar objection heard about most solvent compounds that they leave a greasy feel on the fingers.

In the U. S. Public Health Service tests for cleaning efficiency, both waterless and conventional skin cleaners were rated for their effectiveness in removing from the skin such soils as floor varnish, glue, used axle grease, India ink, mimeograph ink, used crankcase oil, gentian violet dye, flat-coat wall paint, roofing tar, and household adhesive cement. None of the cleaners was able to remove the household cement in 120 seconds, but this waterless cleaner † was the only product rated as "Fast" in removing all the other types of soils. Others were rated "Fast" for some soils.

Laboratory tests of the product at the manufacturer's research and testing laboratory have indicated that the product has an unusually long stability factor built in, will clean fast, and is safe enough to use even on skins that will not tolerate mild toilet soap. According to the firm's laboratory director, this indicates a virtually untapped potential market for the waterless skin cleaner for use in medical and clinical fields.

The manufacturer states that it can be used safely by many patients with skin conditions which may not permit the use of soap and water, and is safe for facial use. It is extremely mild and harmless even in ingestion tests. Three groups of test animals were given

* WADC Technical Report 55-467 "Evaluation of Waterless Hand Cleaners," PB-121389.

† The trade name of this waterless skin cleaner and the name of the manufacturer may be obtained on request to the Editor. The manufacturer will also supply copies of the WADC Technical Report.

extensive daily feedings with no lethal effects. Feedings given to test white rats represented 2000 milligrams per kilogram of body weight.

To use, a small quantity of the waterless skin cleaner is placed on the hands where it liquefies almost immediately. Because of this factor, it removes ground-in grease and grime with unusual speed. Special absorption action lifts soils from pores and around fingernails to give a safe, thorough cleansing action. Used without water, the hands are simply wiped dry. Used with water, the hands are rinsed and dried after using in the regular fashion. Because of its special formulation, the pharmaceutical grade cleaner will not redden or alkaliburn normal skin nor cause chemical drying. It has a pleasant scent and leaves skin soft and pleasant to the feel, according to the manufacturer.

For economy and convenience in using the new waterless product, the manufacturer has available a new dual purpose dispenser, especially designed to handle the skin cleaner either in bulk or in handy throw-away gallon cans. The dispenser may also be used for granulated soaps, creams, pastes, or powders, and for this reason is called a dual purpose dispenser.

The dispenser unit provides positive waste control. Unless a hand is held under the dispenser's discharge valve, it will not operate. A positive cut-off valve prevents drip or sift of soap. Additional economy is given by the positive feed control which can be set from zero to full open.

The transparent window shows at a glance when refilling is needed.

Radiological Safety Conference

The second annual Radiological Safety Conference, sponsored jointly by the New York State Labor Department's Division of Industrial Hygiene and Canisius College, Buffalo, N. Y., will be held June 12, 13, and 14, on the campus of the college, Isador Lubin, State Industrial Commissioner, has announced.

The three-day session is designed to provide up-to-date information and technical assistance to all users of radiant energy in industry, to insure maximum protection of workers. A full session of the planned conference will be devoted to an exhaustive review of the year's experience with the State Industrial Code Rule No. 38, relating to radiation protection. New York was one of the first states to establish regulations of this type.

Radiological Exhibit

The conference will be attended by representatives of industry, organized labor, safety engineers, insurance companies and various other organizations and establishments interested in the industrial use of radiant energy.

This year's conference, planned on an expanded scale, will include also a special exhibit area, providing for graphic displays to help relate the mechanical aspects of industrial use of radiant energy to health and safety protection.

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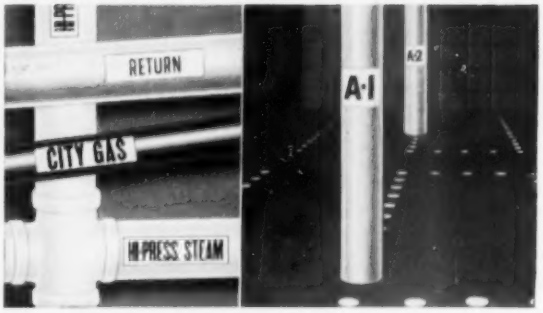
(For details, use Key # E-20 on card on page 73)

Self-Sticking Markers Cut Maintenance Time and Costs



Self-Sticking Markers which cut maintenance time and costs are available from the W. H. Brady Co., Milwaukee. One of their widely-used products, ALL-TEMPERATURE PIPE MARKERS, stick permanently to pipes as hot as 300°F. Millions of them in use in plants of all types today. They conform to ASA standards and give you a fool-proof, cost-cutting method of pipe identification. Write for Bulletin No. 135-B.

Brady Self-Sticking DOTTED LINE AISLE MARKERS offer a fast, low-cost way to mark aisles. They are so tough they outwear painted lines 5 to 1. Miles and miles of aisles are marked with these markers in plants everywhere. Write for Bulletin No. 141.

A quick, economical method for marking areas, bays, posts, bins, pallets, etc., is found in Brady Self-Sticking All-Purpose NUMBERS and LETTERS. These individual NUMBERS and LETTERS let you make up any combination of markings right on the spot. Stocked in six sizes, these handy Markers fit many plantwide Marking needs perfectly. Write for Bulletin No. 165.

Manufacturer: W. H. Brady Co., 773 W. Glendale, Milwaukee 9, Wis.
(For details, use Key # E-21 on card on page 73)

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ALL PERSONS WORKING IN THIS DEPARTMENT MUST WEAR GOGGLES
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PROVED SAFETY BUILDERS warn against all fire, driving, work and machine operating hazards. Brilliant enamel lettering won't fade or peel. Rustproof, sturdy metal 10" x 14" for indoor or outdoor use.
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NO ACCIDENT A DAY KEEPS THE DOCTOR AWAY
GETS-A-LITE GUARD and GUIDE
Quickly and Easily Installed by Anyone — No Tools Needed!
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(For details, use Key # E-23 on card on page 73)

Radiation Standards

Report of the International Commission on Radiological Units and Measurements (ICRU), 1956, National Bureau of Standards Handbook 62, 48 pages, 40 cents, may be ordered from Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

This publication covers the recommendations of the International Commission on Radiological Units and Measurements (ICRU) as agreed upon at its meetings in Geneva in April 1956, and replaces its earlier report issued in 1953. The new report includes an extensive amount of basic information necessary to make radiation dose measurements in energy units (**rads**), and to convert data expressed in roentgens to the equivalent in energy units. It is anticipated that translations of this report will be made into other languages.

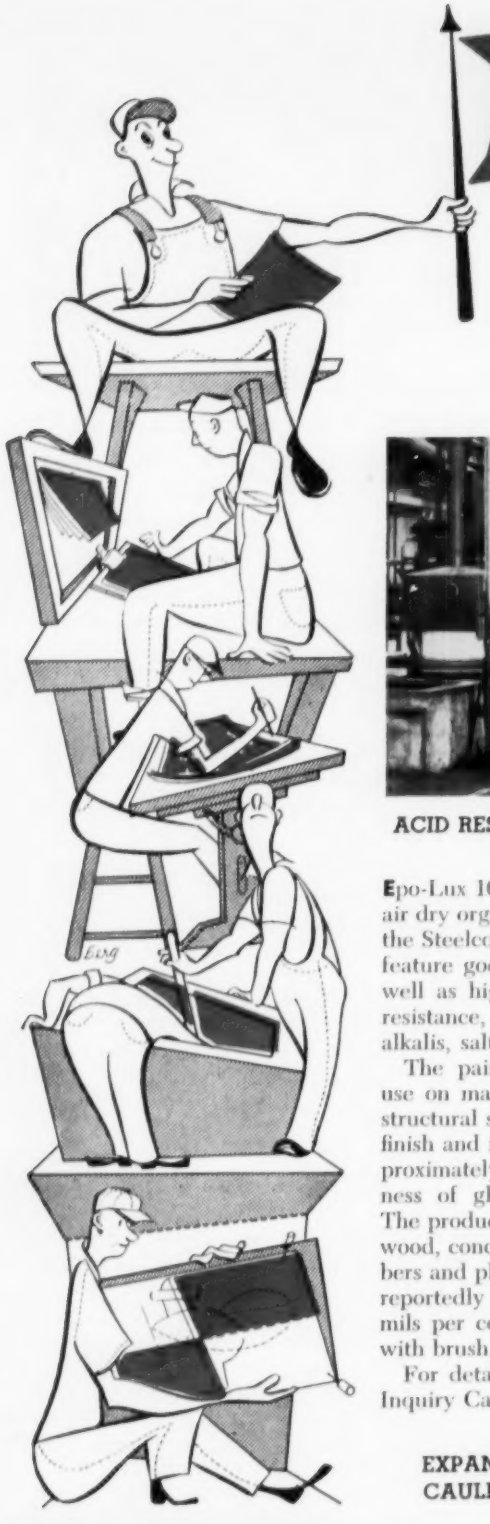
The first of the four chapters into which the Handbook is divided contains an enlarged discussion on radiological quantities, units, and symbols. This includes some pertinent considerations with regard to the parameters involved in the various definitions. In Chapter II, guidance is provided for the clinical application of absorbed dose measurements, giving examples of how the measurements may be used in practical applications. Chapter III presents a detailed treatment of the physical aspects of absorbed dose determination. This covers methods of calculating absorbed dose from measured ionization; the necessary physical data are provided in the form of curves or tables. There is also a discussion of the problem of dosimetry accuracy in X- and gamma-ray therapy.

Reports of the subcommittees are given in the final chapter. The results of several recent international comparisons relating to both X-rays and radioactivity are described. Chapter IV also lists the primary standards, X-ray standards, and radioactivity standards available in various countries and laboratories, as well as an extensive bibliography covering much of the subject matter contained in the report. A suggested outline of an international treatment summary form is given in one of the appendices. (In ordering, foreign remittances must be in U. S. exchange and should include an additional one-fourth of the publication price to cover mailing costs.)

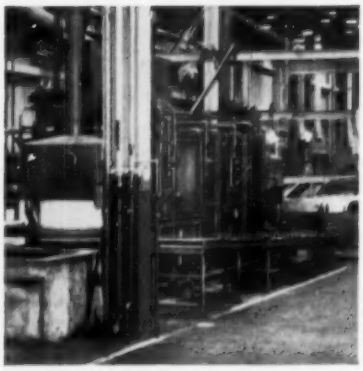
Washroom Maintenance

Newest educational project just released by the National Sanitary Supply Association covers the care of washrooms. The entire program is covered in twenty-six 35mm. colored slides. Its purpose is to get better cooperation from maintenance crews. The slides are available from members of the Association or arrangements for the showing can be made direct by writing to the National Sanitary Supply Association, 139 N. Clark St., Chicago, Ill. Slides are educational and contain no advertising of any kind.

KEEPING UP WITH



BUILDING MAINTENANCE SERIES
other articles by A. A. Marx



ACID RESISTANT MACHINERY PAINT

Epo-Lux 100 is a chemical resistant air dry organic finish introduced by the Steelcote Mfg. Co. It is said to feature good adhesive qualities, as well as high impact and abrasion resistance, and resistance to acids, alkalis, salt and solvents.

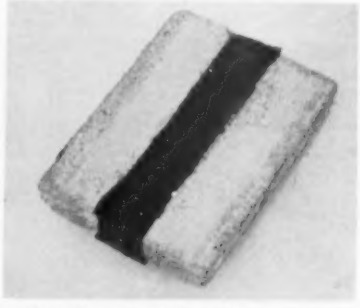
The paint is recommended for use on machinery, equipment and structural steel. It has a high gloss finish and is claimed to possess approximately 75 percent of the hardness of glass without brittleness. The product adheres well to metal, wood, concrete, paper, certain rubbers and plastics. Its film thickness reportedly measures two to three mils per coat, and can be applied with brush, spray or roller.

For details, use **Key # BM-1** on Inquiry Card on page 73.

EXPANSION JOINT AND CAULKING COMPOUND

Hornflex rubber expansion joint and caulking compound is for use in control of expansion and contraction as well as on surfaces where adhesion is difficult. Applied either by caulking gun or spatula, it is used to fill and seal surface joints in buildings, highways and many other structures. It is effective in curtain wall construction, in sealing joints between metal panels of stainless or enameled steel, glass in needlepoint glazing, as well as building materials of dissimilar surface density and texture.

According to the manufacturer, the A. C. Horn Division, Sun Chemical Corp., the product's elasticity will elongate and compress without fatigue over a range of temperatures from 50° below zero up to 250°F. It bonds to relatively dry masonry, concrete, metal or other building materials and will not oxidize or absorb moisture, thus effectively sealing joints against air, water, snow and dust. Applied cold



and under normal conditions, it sets to touch in 12 hours and attains maximum strength in seven days. In application where vibrations and continual movement in (at) the joint is evidenced or anticipated, Hornflex can be damp cured (wet rags, damp sand, etc.) to attain maximum strength in less time than the normal set. It is chemically inert to light, atmospheric conditions, salt and petroleum products, and available in a black, aluminum or grey color.

For details, use **Key # BM-2** on Inquiry Card on page 73.

BUILDING MAINTENANCE DEVELOPMENTS

CENTRAL VACUUM CHIP COLLECTING SYSTEM

Exidust central vacuum cleaning systems, manufactured by Lamson Corp., have been used for a number of housekeeping purposes. These same systems are now being used for chip collection in the dry cutting of metals.

In these cases the machine operator is given a vacuum hose rather than a high pressure hose. Chips are picked up as they are cut, rather than blown into the machine and onto the floor. Machine maintenance is reduced since the chips are not blown into moving parts of the machine tool. It also reduces the danger of employees being struck by flying chips. Chip collection at the source also results in savings in clean-up time and in producing cleaner, safer work conditions.

For details, use **Key # BM-3** on Inquiry Card on page 73.

"FLUSH-OFF" PAINT REMOVER

Paint, varnish, lacquer, seal and oxidized oil can be removed from concrete, wood and terrazzo floor surfaces without time-consuming scraping and expensive labor cost, according to the manufacturer, the Masury-Young Co. MYCO Paint and Varnish Remover is said to effectively loosen the surface coating and holds it in suspension for easy "flush-off" removal with water, leaving the surface clean and completely free of all coating residue and dirt. It may also be applied to vertical surfaces such as walls, doors, partitions and woodwork since it will not run off when applied.

The product will also remove stains and darkened edges from unsealed wood floors maintained with floor oils. It is non-flammable, has a low degree of toxicity and is available in 5-gallon containers.

For details, use **Key # BM-4** on Inquiry Card on page 73.

HIGH-REACHING DRY MOP

A dry mop to clean walls, ceilings, fixtures, etc., up to twenty feet overhead has been introduced by Ready, Inc. The design of its head attachment makes possible the cleaning of tops or undersides of light fixtures, overhead pipes and other objects.

The mop measures twenty-two inches wide and weighs less than three pounds (including its two extension handles featuring snap-on attachment). Because of its high-reaching extensions, use of the mop requires no ladders or staging to reach difficult, overhead places. The mop pads are made of cotton fiber and are disposable.

For details, use **Key # BM-5** on Inquiry Card on page 73.

COLD PROCESS ROOFING

A new process by which new roofs can be installed right over old ones has been announced by The Monroe Company, Inc. Known as the "Cold Process Roofing" system, the method eliminates the necessity and expense of removing old roofs before work can be begun on new built-up roofs. It also does away with heating of the roof coating, hot mop applications and the use of gravel. Fire danger is said to be completely eliminated.

Key to the process, commonly referred to as CPR, is the use of newly-developed Monroe roofing products. Among these are Hold-Tite, an adhesive sealing cement which welds new felt to the old surface and also bonds individual felt plies firmly together. Another is Monroe heavy-duty cold process 53 lb. roofing felt, asphalt-saturated and compatible with both Hold-Tite and Siliconed Rufferseal roof coating. The latter is spread completely over the repaired surface as the final step in the installation of the new built-up roof. It is composed of long fibre Canadian asbestos, imported and domestic asphalts and special penetrating oils.

For details, use **Key # BM-6** on Inquiry Card on page 73.

WATER RINSABLE PAINT REMOVER

Tedious tasks of scraping, sanding, and wire-brushing are eliminated by use of a paint remover. Applied with an ordinary paint brush, it removes stubborn coats of paint, varnish, and lacquer from wood and metal by simply directing a strong spray of water on the coated surface. The product, developed by Pittsburgh Plate Glass Co., is known as Rinse Away paint and varnish remover. With its use, paint may be washed away within 15 to 30 minutes after application, leaving a bright, clean surface that needs no treatment of any kind before repainting. Unlike other paint removers, Rinse Away remover leaves no residue of any kind to interfere with drying of subsequent paint coatings.

The new remover is non-flammable and, in addition to removing surface paint, may be used as a cleanser in reconditioning old bristle and nylon paint brushes. The product is packaged in pint, quart, and gallon containers.

For details, use **Key # BM-7** on Inquiry Card on page 73.

SCRUBBER-VACUUM MACHINES

Finnell System, Inc., has announced that its self-powered combination scrubber-vacuum machines, both gasoline or propane operated, are available in 18, 30, and 36-inch brush spreads. Known as Scrubber-Vac, these machines automatically apply the cleaner, scrub and pick-up, all in one operation. The 30 and 36-inch sizes also flush-rise, if required.

A clutch lever adjusts speed to the desired rate (up to 150 fpm for the 18-inch size and 136 fpm for the 30 and 36-inch sizes). One engine operates all working parts. The units perform quietly, according to the company. A monoxide eliminator, powder dispenser, and rinse assembly are accessories. The company also makes a full line of electrically operated combination machines.

For details, use **Key # BM-8** on Inquiry Card on page 73.

FLOOR PATCHING COMPOUND

New Jiffy Floor is formulated to quickly repair expansion joints, floor cracks and other surface defects according to The Monroe Company, Inc. A fine granular, ready-to-use plastic product, Jiffy Floor readily fills hairline cracks, shallow holes or spalled floors. It can be applied without disrupting production or traffic and withstands

heavy loads immediately after application. The product contains no asphalt, cement, sand or gravel. The company advises that it will not crack, crumble or curl and can be applied either indoors or out. It is not affected by temperature changes.

When applied, Jiffy Floor is said to be waterproof, dustless, skid-proof and noiseless. It is delivered in 5-10-30 and 55-gallon drums, ready for use. No mixing is required. An outstanding feature is its extreme ease of application which consists merely of priming, filling and tamping.

For details, use **Key # BM-9** on Inquiry Card on page 73.

ANTI-RUST PAINT

A new special grade of its CI-88 anti-rust paint that is reputed to go on satisfactorily even over damp surfaces, is announced by Chem Industrial Co. Known as "88 Special," it combines a "heavy" bituminous alkyd base with a special penetrating vehicle. The latter is said to cut

through moisture to surface metal. It is recommended for wet weather applications or use where it is virtually impossible to dry a metal surface thoroughly. Because of its ability to adhere to damp metal, it is particularly well adapted for use in coastal areas or in tropical climates where moisture is always present.

The product forms an attractive, shiny black elastic coating that resists dampness, mild industrial acids and fumes, grease, oil, drying effects of sun, and extreme temperature changes, and retards the corrosive effects of salt water and salt-laden air. The manufacturer recommends "88 Special" for use on exterior metalwork, including standpipes, gutters, downspouts, flashings, ventilator outlets, gratings, fire escapes, sashes, covers and housings. Among its marine applications are hulls, winches, pumps, ground tackle and dry dock equipment. It also can be used on railroad freight cars, signal towers,

bridges, trestles and switch mechanisms. It is available in 1-gallon cans, 5-gallon pails and 55-gallon drums. It can be applied by brush, spray or roller.

For details, use **Key # BM-10** on Inquiry Card on page 73.

GLARE-REDUCING COATING

Bright sunlight glare through windows and other glass areas can be eliminated, as well as much of the heat rays, with a newly developed coating, SE-459 Non-Glare Blue & Green Transparent, according to Everseal Mfg. Co., Inc.

The manufacturer reports that this coating when brushed or sprayed on the glass surface will not lessen the transparency of the glass. It does filter the eye-straining glare and the heat rays from the sun entering through the tinted glass. The new product is equally effective whether applied to the inside or the outside of the glass and it will withstand repeated washings. It will not peel or crack, but merely wears away. An additional coat may be applied directly over the original coat. A single coating reportedly has a life expectancy of up to three years.

For details, use **Key # BM-11** on Inquiry Card on page 73.

MULTI-PURPOSE SEALING COMPOUND

A synthetic rubber caulking and sealing compound for curtain and panel wall construction has been introduced by the Building Products Div. of L. Sonneborn Sons, Inc. Called Sonolastic Sealing Compound, it reportedly becomes a resilient part of the joint structure for the life of the building.

The product is non-shrinkable and impervious to the effects of air, moisture, salt spray and sunlight. It is said to possess the property of "cold flow" and complies readily with distortions of panels caused by extremes of temperatures. According to the company, beads approximately ⅜ inches deep and ½ inch can be stretched to four times their width without damage to adhesion or continuity. Sonneborn recom-

EDMONT CASE NO. 356: To a leading appliance maker, Edmont recommended a light-weight, plastic-impregnated glove (No. 151 Werx) for handling molded plastic parts. It protected against the sharp edges . . . prevented finger printing the polished surfaces . . . and outwore canvas gloves previously used 4 to 1.

Edmont job-fitted glove replaces canvas and goatskin

Made of special vinyl-impregnated cotton fabric, Edmont Werx gloves average 4 times longer wear than canvas. On many jobs they also outwear expensive goatskin gloves and have no offensive odor or thick and thin spots. Exceptional dexterity and non-slip grip make them ideal for inspecting small parts, material handling, shipping and receiving operations. They are moisture repellent and wash without shrinking. Available in two styles and sizes for both men and women.

EDMONT CASE NO. 583: For handling and inspecting rubber automotive parts, manufacturer had been supplying women employees $12 a dozen goatskin gloves that wore 20 shifts. Edmont recommended No. 101 Werx gloves which averaged 25 shifts wear and cut glove costs 66%. And, because they're odorless, women preferred Werx.

FREE TEST OFFER TO LISTED FIRMS: We make over 50 types of *job-fitted* gloves in various styles and coatings. Tell us your operation, materials handled and temperature condition. We will recommend the Edmont glove and coating that best fit your job and supply samples for comparison testing on-the-job.

Edmont Manufacturing Co., 1256 Walnut Street, Coshocton, Ohio

Leading Industrial distributors supply Edmont gloves.
In Canada write Mine Safety Appliances, Toronto

Edmont

Edmont JOB-FITTED GLOVES

(For details, use Key # E-24 on card on page 73)

mends its multi-purpose sealing compound in construction requiring adhesion, weathering resistance, elasticity, extreme temperature ranges, oil resistance and durability. It works equally well as a caulking, sealing and joining compound for metal, glass and concrete. The compound comes in 10 and 2½ pound units, comprised of both base and activator.

For details, use **Key # BM-12** on Inquiry Card on page 73.

GERMICIDAL DETERGENT

Baccene, a formulation of synthetic detergents combined with powerful germicidal and disinfectant agents has been introduced by the Selig Co. Its concentrated ingredients provide both an efficient cleaner and effective, positive disinfectant, the manufacturer reports.

The product is recommended for floors, walls, woodwork, equipment, rest rooms, and wherever the use of a germicide is indicated. Safe to use, it is odorless, non-flammable and non-staining. A multi-purpose formulation, it cleans, disinfects and deodorizes in one operation.

For details, use **Key # BM-13** on Inquiry Card on page 73.

HEAT RESISTANT PAINT

A quick-drying heat resistant paint for use on surfaces subjected to temperatures up to 600 degrees F. is announced by Speco, Inc. Known as Heat-Rem QD Black, it is said to air-dry to a tough, bright finish in less than 2 hours. In addition, it is reputed to achieve maximum effectiveness without special baking and to have no objectionable odor during application. It can, as a result, be used in any quantities without interrupting regular work schedules.

According to the manufacturer, QD resists extreme temperature variations, smoke, moisture, fumes, mild industrial acids and alkalies. It is recommended for protecting steam lines, vats, separators, exhaust manifolds, stacks, tanks, ovens and heat lines. Applied by either brush or spray, it covers approximately 500 sq. ft. per gallon. It is available in quart and gallon cans, 5-gallon pails, 30 and 55-gallon drums.

For details, use **Key # BM-14** on Inquiry Card on page 73.

FIBER GLASS PIPE INSULATION

The Fiber Glass Div. of Pittsburgh Plate Glass Co. has announced the addition of Pipe Line Wrap to its present line of fiber glass products. Known as Pitt-Wrap, the pipe-line insulation is being produced in both parallel-reinforced and non-reinforced types. A complete line of widths and lengths is available to suit a variety of requirements.

The glass mat is made from long fiber glass. It possesses high strength and can be held to close tolerances, according to the company.

For details, use **Key # BM-15** on Inquiry Card on page 73.

Maintenance Engineering

A new group to deal with the increasingly complex engineering problems encountered in keeping industrial equipment in operating condition has been formed by The American Society of Mechanical Engineers. The unit will cover such topics as modification of equipment and facilities to reduce or eliminate maintenance problems, prescribing corrective measures—including the development and use of special instruments—and managerial activities such as organization, planning and keeping of records.

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(For details, use Key # E-15 on card on page 73)

CHARGING BATTERIES HAVE AN EXTRA CHARGE

A garageman forgot that when car batteries, or any acid batteries, are being recharged they give off hydrogen. The mixture of a little hydrogen with air is highly explosive. He lit a match near a battery charging rack and the batteries exploded. Charging areas should be well ventilated and smoking strictly forbidden. How about some safety signs?

EIGHTY TO ONE SHOT

A certain company had 80 employees, but the only man who regularly wore safety goggles was a machinist. One day the left lens of his goggles was shattered by a flying piece of tool steel, but the machinist's eye was unhurt. Since then, all employees have been fitted with safety glasses.

IMPROPERLY GUARDED GRINDER

Grinders should be guarded in two ways. One should protect the operator's eyes from flying sparks and dust by means of a safety glass shield AND safety goggles. The other guard should enclose most of the wheel to prevent injury if the wheel should burst. In this accident case, a light metal enclosure shield was being used, primarily as a guard against the sparks and dust. But the wheel tore apart and through the light metal guard, and the fragments inflicted serious injury on the operator. Enclosure guards must be strongly constructed to withstand the impact of a broken wheel.

EXTINGUISHER EXPLODES

This incident about a carbon dioxide fire extinguisher exploding doesn't mean that you should get rid of fire extinguishers. Far from it! But it does mean that people would do well to double-check the location of extinguishers. The unit that exploded was in a hospital kitchen and, although it did considerable damage, no one was injured. Investigators found that the extinguisher had been placed next to a steam pipe and the heat caused the compressed gas to expand until something had to give.

ATTENTION: MACHINE TOOL OPERATORS

Much progress has been made in eye safety, but accidents still continue to rob people of their sight simply because protective devices are not used. This time it's a machinist operating a lathe. A fine steel shaving penetrated his eyeball. Operators of machine tools, whether a lathe, milling machine, shaper, etc., should wear safety goggles. Additional protection could also be provided by a transparent plastic shield with a magnetic base which can be located on the machine as required.

SAFETY SHOE SAVES

The bagging machine in a chemical plant was stopped and the operator placed his foot on what he thought was the safety guard, but actually was part of the slat conveyor. He pushed the starting button and the conveyor carried his foot into the machine. Although his ankle was fractured, his safety shoes prevented additional injury to his toes and foot. This incident points up three basic facts about accidents: 1. Lack of attention causes accidents, 2. Inadequately guarded machinery is dangerous (A new type of safety guard has since been installed), 3. Personal safety equipment such as safety shoes minimize injuries.

NOT A NOOSE, BUT . . .

A painter was using a boatswain chair, but the supporting rope broke and the man plunged to his death. Inspection revealed that the rope was in poor condition because of improper storage and maintenance. Fiber ropes should be kept away from contact with chemicals and paints and also away from excessive heat. Most important, too, is the regular inspection of ropes prior to use to make sure they are safe.

LADDER FALL

The electrician was using a ladder on the front of a store. Since the sidewalk was on an incline, the electrician had placed a brick under one leg of the ladder to make it level. While he was working on the ladder, the ladder leg slipped off the brick and the electrician fell to the sidewalk. For ladders used on slanting surfaces there are leg equalizers that adjust to uneven surfaces and are equipped with non-slip feet. It is also sound safety practice to lash at the top any ladder that may be insecure.

WINERY HAZARDS

In a winery two men were found dead—not drunk, but overcome by carbon dioxide fumes. They had been sent to clean out a fermentation tank and had not ventilated the tank completely before entering. Tanks must be thoroughly ventilated before and during cleaning operations and the atmosphere tested with a flame safety lamp to see if there is sufficient oxygen. If there is any doubt about the oxygen content or dangerous fumes, workers should have self-contained or air-supplied breathing apparatus.

DOUBLE UNSAFE ACT

Something was missing in this worker's safety training. It developed after the accident, that he had intended to dust off his clothes with an air-hose. This, in itself, is an unsafe act. But what really happened was that the employee grabbed a steam line hose by mistake. The result can be imagined!

Safety & Human Values

(from page 34)

fare of the other fellow as well as for ourselves."

The important element in attaining good citizenship, he said, is education, which must start in the home and is the primary responsibility of parents.

The area of safety in the home, Mr. Queener said, "is still more uncertain" than that of traffic safety. "Parents," he continued, "must provide the leadership in the home, just as we have seen how they must provide the leadership for good citizenship training.

"Statistics show overwhelmingly that it is much safer to be at work than at home. The home, we all know, under our doctrine of freedom, is the citizen's castle. We cannot attempt to regulate it. The answer is the challenge to each of us. We can and do attempt to reach into the home through magazines, radio, and TV with safety messages. Industry works into the home through its employees. But in final analysis, action and leadership must depend upon 'the head of the home.'"

Hard hats will always be in style so far as Pueblo's Fidel Cordova is concerned. The shattered hard hat probably saved 31-year-old Cordova's life. A third ladle man in the Colorado Fuel and Iron Corporation's Pueblo Plant Open Hearth, Cordova was struck by a piece of chain, weighing at least 200 lbs., that was sprung out of a hoist hook during crane operations. Standing 15 feet away from the crane, Cordova was almost driven to the floor by the impact. A CF&I employee since 1949, safety-conscious Cordova has lost no time in getting himself a new hard hat, in the style he likes: the life-saving style.

Injury Rates Decline

The all-manufacturing injury-frequency rate moved downward in the final months of 1956 and established three new record lows, according to preliminary reports compiled by the U. S. Department of Labor's Bureau of Labor Statistics.

In October the average of 12.1 disabling injuries per million employee-hours worked was a shade higher than the all-time low for October, 12.0, established in 1954. In November, however, the rate dropped to 10.8, a record low for that month. In December it fell again to 9.9, an all-time low for any month. Reflecting these improvements, the average for the quarter, 11.0, was slightly better than the best fourth-quarter record of any previous year, 11.2 established in 1954.

These preliminary reports indicated an all-manufacturing injury-frequency rate of 11.9 for the full 12 months of 1956. This represents some improvement from the 1955 average of 12.1 and equals the all-time low annual average established in 1954.

About half of the 137 individual industries studied recorded significant decreases in their injury rates between the third and fourth quarters and most of the others showed little change. Only 18 reported increases of 1 full frequency-rate point or more. On an annual basis, most industries held their injury rates at or below those for 1955: 83 showed little change, 32 recorded decreases of 1 full point or more; and only 22 showed significant increases.

The largest decrease between the third and fourth quarters—from 30.4 to 20.4—occurred in the concrete, gypsum, and mineral wool industry. The annual average, however, stood at 26.2, little change from the 1955 rate of 26.9. The principal quarter-to-quarter decreases among other industries included: public building and professional furniture, from 26.1 to 16.5; bottled soft drinks, from 23.9 to 15.8; structural clay products, from 33.1 to 25.6; canning and preserving, from 26.4 to 19.2; leather tanning and finishing, from 23.8 to 17.1; sawmills and planing mills, from 42.8 to 36.4; malt and malt liquor, from 17.9 to 11.7; logging, from 71.4 to 65.4; medical instruments and supplies, from 10.5 to 4.6; sheet-metal work, 24.5 to 18.7; metal barrels, drums, kegs, and pails, from 12.8 to 7.0; screens, shades, and blinds, from 16.1 to 10.9; fabricated metal products, from 14.4 to 9.2. Many of these decreases, however, represented the usual declines following high levels during the summer months. Two industries did record outstanding decreases in their annual averages; compressed and liquefied gases, from 11.3 in 1955 to 5.2 in 1956; and plywood mills, from 29.6 to 24.2.

With vacation time approaching, the Scintilla Magneto Division of Bendix Aviation Corp. at Sidney, N. Y. reminds its employees about off-the-job safety. A constant change of copy on the plant's new safety promotion sign has proved especially effective in dramatizing the importance of accident prevention. The display accommodates four lines of 8-inch red plastic letters.

Picture by, courtesy of Wagner Sign Service, Inc.

A total of 18 industries brought their annual rates below 5 injuries per million employee-hours in 1956. The 10 best records were: synthetic fibers—1.7; synthetic rubber—2.0; miscellaneous communication equipment—2.6; aircraft—2.7; miscellaneous industrial organic chemicals—2.8; radio tubes—2.9; explosives—3.0; electric lamps (bulbs)—3.0; plastics, except synthetic rubber—3.7; and electrical equipment for vehicles—3.7.

On the other hand 9 industries had rates of over 25 injuries per million employee-hours: logging—69.4; sawmills and planing mills—41.3; poultry and small game dressing and packing—36.7; boat building and repairing—32.7; structural clay products—31.3; miscellaneous wood products—28.9; gray-iron and malleable foundries—27.8; wooden containers—27.3; concrete, gypsum, and mineral wool—26.2.

The above rates are preliminary and subject to revision.

THE FIRE FRONT

U.S.—Canada Burned Up by "Large Loss" Fires

North America last year suffered a devastating and record-shattering increase both in the number of big fires and in the resulting amount of dollar loss. There were 430 "large loss" fires in the United States and Canada in 1956 and they caused a total direct loss of $330,156,000, as reported by the National Fire Protection Association in its annual study of North American fires with individual losses of at least $250,000. The study is contained in the Association's Quarterly Magazine.

The 1956 totals were excessively larger than those of previous "worst" years according to the NFPA report. The 430 fires exceeds by more than a third the 1955 high of 316 large loss fires.

The direct dollar loss of last year's big fires is greater by $50 million than the previous record loss of $274,374,500 in 1953.

The non-profit fire safety group stated that it annually conducts a careful analysis of the most expensive fires of the past 12 months "so that the lessons of these fire disasters may be easily recognized by those responsible for the application of sound fire prevention and protection principles."

Although only a minute proportion of the total of all types of fires in 1956—less than three hundredths of one percent—the 430 large fires studied accounted for 24 percent of the year's total fire loss of $1,385,000,000 in the United States and Canada (NFPA preliminary estimate).

The largest single classification among the eight into which the study has been divided was that of industrial large loss fires. There were 117 such fires as compared with only 78 the previous year.

The industrial toll was the highest in history and, according to the NFPA, is the principal factor behind the huge over-all increase in fire losses in North America in 1956.

The report pointed up these additional comparisons and findings.

The 14 large loss church fires last year equaled the total of such fires for the preceding three-year period.

There were 21 large loss school and college fires in 1956; only 10 in 1955. The Association noted that six of the 18 "big" school fires were discovered while the schools were in session. All were safely evacuated without a single injury attesting to the effectiveness of properly executed fire exit drills.

The experience in 24 large loss residential and institutional fires—more than double any recent year's total—emphasized that there is no guarantee of prompt discovery of fire even in occupied buildings.

The need generally in these and other large occupancies, the report advised, is much more prompt fire discovery through such means as standard watchman protection, standard automatic fire alarms or standard automatic sprinkler systems.

The lack of these same measures was cited by the NFPA as the principal reason why 43 of last year's 50 large loss warehouse fires had spread out of control before being discovered.

Again, delayed detection was a major factor in 46 out of 53 large loss store fires in 1956, the report stated.

Fire Deaths

There were 401 deaths caused by the large loss fires. Of these, 333 were aircraft fire fatalities. The previous year's death toll from big fires was 296.

The study recorded a total of 87 large loss aircraft fire accidents and two of these represented the year's largest in terms of dollar loss. Each of the latter was listed as an estimated $8 million loss.

Both involved Air Force B-52's: one occurred on last September 15 near Madera, California, and cost the lives of five men; fire destroyed the other and killed ten men on November 30 near Castle AFB, California.

The largest structural fire of the year occurred on December 3 in Brooklyn, New York, when the Luckenbach Steamship Company pier was the scene of both a fire and an explosion. Ten people were killed and total loss was estimated at $7,600,000.

Excluding transportation fires, 304 of the large loss fires occurred in the United States, 34 in Canada.

States with the largest numbers were California with 26, Illinois and Pennsylvania 25 each, New Jersey 23, New York and Ohio 22 each, Indiana 16.

The province of Ontario in Can-

March Losses Up

Estimated fire losses in the United States during March amounted to $104,565,000, the National Board of Fire Underwriters has reported. This loss represents an increase of 17.1 percent over losses of $89,315,000 reported for March, 1956, and an increase of 9.4 percent from losses of $95,569,000 for February (1957).

Losses for the first three months of 1957 now total $315,406,000, an increase of 16.7 percent over the first three months of 1956, when they amounted to $270,328,000. These estimated losses include an allowance for uninsured and unreported losses.

ada had 11 large loss fires and Quebec 5.

Altogether, 86 of the big fires involved losses of $1 million or more each; correspondingly, there were 61 in 1955.

As in the past, the majority of large loss fires, 320, occurred in buildings. And in 260 of the building fires, according to the NFPA study, "structural fire protection weaknesses played a significant part in the extent of damage."

Welding & Cutting As a Fire Cause

Gas and electric welding and cutting are two of industry's most useful and indispensable tools, but the careless use of this equipment continues to show an adverse fire record, according to a recent bulletin issued by the National Board of Fire Underwriters. For example in 1955, of the 225 building fires in the United States and Canada where the individual fire loss exceeded $250,000, welding and cutting operations were responsible for as many fires as any other single cause.

To cite a few examples of such fires that have occurred in recent years: a four story bank building in Syracuse, New York, suffered in April of last year a quarter of a million dollar fire during a major remodeling due to sparks from a cutting torch igniting readily combustible material nearby. In May of 1955 a Front Royal, Virginia plant had a million and a half dollar fire due to sparks from a cutting torch being used on the second floor of a building igniting oily deposits on the ceiling and oil in drip pans on the first floor. The largest single fire loss on record was due to welding sparks. This fire was the 70 million dollar loss at Livonia, Michigan in 1953.

Though welding itself is an important fire cause, cutting is the big offender because sparks and molten metal from cutting torches travel farther and are more likely to cause fires than sparks from gas or electric arc welding. In addition welding operations can be more effectively controlled as this equipment often constitutes a separate setup of a permanent nature with proper safeguards a part of the installation. Cutting operations more often than welding take place on site as in maintenance work on buildings or equipment and in locations where there is limited space and combustible material that cannot be removed.

Portable equipment causes the greatest number of fires. This is especially true when an outside welding contractor is called in to do the job. Outside workmen usually are not familiar with plant operations or the hazards that may exist, and usually not particularly concerned with taking the necessary precautions.

In order to prevent welding and cutting fires, it is necessary to know how such fires start. Sufficient heat to ignite combustibles can come from oxyacetylene flame, from the hot metal being cut or welded, from molten slag, from metal that drips from the cut and from sparks which fly from the work. Hot pieces of iron or steel cut away from the main metal are often allowed to drop to the ground. The smaller the piece cut away, the more heat it will have absorbed and the more likely to set fire to combustible material. Pieces of iron which have been heated to a bright red may retain enough heat for 5 to 15 seconds to start fires. Even though the heated metal may be black in color in daylight, pieces have been known to start fires.

Spark Hazards

Sparks from cutting or welding operations must be watched closely to make sure they do not set fires. Sparks of this kind are small globules of molten metal which are thrown out in a heavy shower, particularly in cutting operations sometimes for a distance of 25 or 30 feet. These pieces of metal hold heat for some time and readily ignite any light combustible material with which they come in contact. They often start smoldering fires which are not immediately discovered. Flammable liquids and gases, paper and rags ignite readily. Wood flooring or partitions do not ignite as readily but special precautions are necessary with these materials for fires may smolder undetected for some time before flaring up to initiate a more serious fire when no one is present. Experience has shown that sparks may lodge in cracks in woodwork, or drop through openings onto combustible material within the walls or on floors below. Sparks have fallen into tanks containing flammable liquids with disastrous results.

Inspection of Welding Location Necessary

Welding and cutting fires are preventable through proper planning. Some person in authority, usually the chief fire protection or safety engineer, should be responsible for the safety of all such operations whether performed by his own company's welders or by outside contractors. A permit should be obtained by the welders or cutters from the responsible individual before they start their work. This responsible person should check the location for fire hazards and consult the nearest person in authority at the welding or cutting site for his knowledge or serious fire hazards that may be present and specify the precautions that must be taken before he issues a signed permit.

When possible, cutting or welding work should be moved to a safe location. A noncombustible room containing no appreciable amount of combustibles, or a sprinklered area containing no flammable gases or liquids or other fast burning materials is considered a safe location. It is known that of all the fires caused by welding and cutting about 80 percent are caused by cutting operations in some place other than a permanent, safeguarded location. If the work cannot be moved to a safe location, materials that burn easily should, if possible, be removed to a safe distance. If the object to be welded cannot be removed, and the combustible materials cannot be moved, sheet metal shields and flameproof tarpaulins of sufficient size and number should be used to confine the sparks and slag.

If possible, all molten slag or sparks should be caught in a pan of sand. Floors where the work is

to be performed should be swept clean and combustible floors should be wet down. When working very close to wooden construction such as beams, partitions, flooring or scaffolding, sheet metal guards or asbestos should be used to protect the wood from the direct heat of the flame. If welding or cutting must be done in any area that contains or has contained flammable liquids, gases or combustible dusts, the area should be ventilated thoroughly. Prior to welding or cutting on equipment covered with a combustible residue, such residue should be removed.

When welding or cutting work must be done on an automatic sprinkler system or where the sprinklers are shut off for any reason extra precautions should be taken. Welding and cutting operations should be avoided at the same time repairs are made to sprinkler systems.

Have Fire Watchers

A fire watcher with a proper type fire extinguisher should be assigned to the job to watch for fires. The welder himself cannot do this because his attention is focused on the welding or cutting work and small sparks cannot easily be seen through goggles. Where sparks may fall to floors below, one or more additional watchers with extinguishers should be provided there, also on the floor above if conditions warrant.

The responsible person should inspect the location thirty to sixty minutes after the hot work has been completed to make sure there are no deep seated sparks. When conditions indicate necessity for a longer watch period and a special watchman cannot be assigned, the plant watch service should be assigned to watch the area.

Gas Hazards

The proper maintenance and use of welding and cutting equipment is important to fire safety. The equipment should be listed by a nationally recognized testing agency. However, all fires cannot be prevented by safeguards built into the equipment. A good fire record can be accomplished only by the purchase of safe equipment, plus its proper maintenance, plus the careful and intelligent observance of safe practices.

When the gas welding or cutting flame is shut off for a few minutes the torch valves should be closed. When operations are stopped for longer periods, the oxygen and acetylene cylinder valves should be closed. A torch should never be put down unless the oxygen and acetylene have been completely turned off. Torches should never be hung from regulators on cylinders.

Hose Hazards

Hose connections should be marked for identification to avoid interchange of acetylene and oxygen hose. The generally recognized colors are red for acetylene and other fuel gas hose and green for oxygen hose. Hose should be inspected frequently for leaks, burns, worn places, loose connections or other defects. Where hose shows excessive wear or has been subjected to flash-back it should be tested at twice its normal operating pressure but not less than 200 psi.

Oils, graphite and lubricants may ignite explosively at ordinary temperatures in the presence of compressed oxygen and should never be allowed to come into contact with oxygen equipment. Portable cylinders should be positioned upright in a secure manner so that the valves, regulators and other parts are well guarded.

Fire Loss Analysis

John A. Neale, president of the National Fire Protection Association, told the organization's fall meeting in St. Louis that there has been a tremendous increase in fire protection activities throughout the nation. Without continuing effort, he said, today's record high fire losses would show a far greater proportionate increase.

According to Mr. Neale, a recent analysis of the relationship of fire losses to national wealth, which includes the accumulation of values in buildings and structures, equipment, inventories, etc., shows that the percentage of the national wealth destroyed by fire is now one-third of what it was in 1900. It can be shown, too, that the number of building fires have not increased proportionally with the number of buildings, he said.

More Effort

"Now, I'm fully aware that this is a rather dangerous statement to make and might be misinterpreted," Mr. Neale declared, "so let me say that our national fire waste is a disgrace and a scandal, particularly so because many fires can be easily prevented."

In conclusion, Mr. Neale observed that the time will probably never come when the job of fire prevention will be done and fire protection engineers can relax. "But," he declared, "we can see very plainly that our efforts are producing results. We are on the right track. Greater efforts can be expected to produce greater results."

"Mac, this is the tool of 101 uses . . ."

". . . 102 uses."

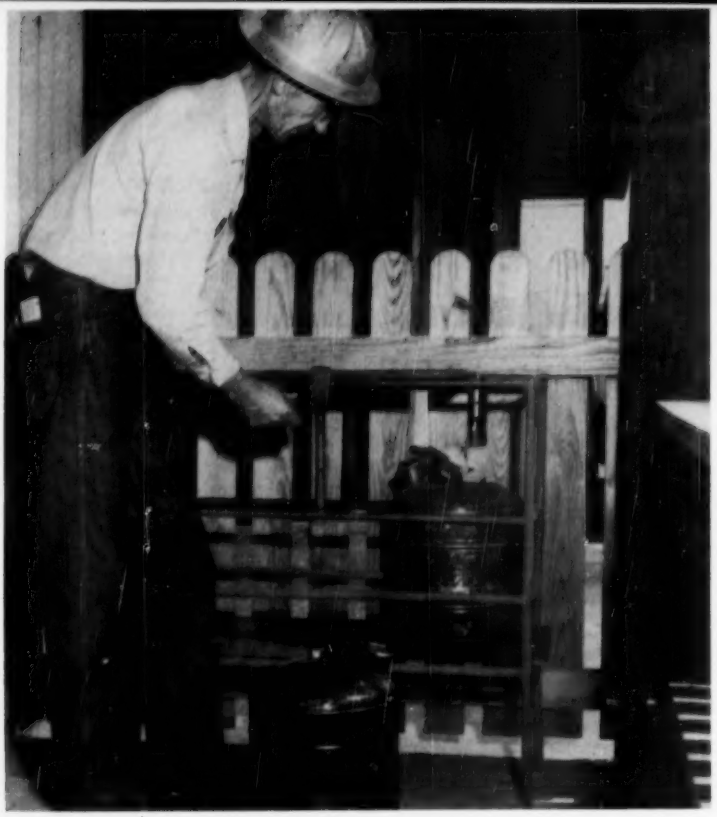

Fig. 1—Cans outside are protected from unauthorized use by lock-type racks.

LIQUIDS HANDLING SERIES

TIPS ON

Fig. 2—Labelled safety cans in laboratory aid efficiency, guard life, property.

Fig. 3—A label and a distinguishing color tell contents of disposal cans.

Fig. 5—Safety can is used to fill starting engine at pipe line station. Spout is grounded as gasoline is being poured.

Fig. 6—A convenient and safe container for refuelling of lawn mowers. Engine should cool before receiving gas.

HANDLING FLAMMABLE MATERIALS

Who should know more about the safe handling of flammable liquids than refineries? Here are some tips the Humble Oil & Refining Co. gives its own employees to prevent fires and explosions from the routine handling of small quantities of flammable substances.

The safe storage and safe handling of small quantities of flammable liquids deserve major consideration. Numerous pieces of small motorized equipment are refueled from portable containers. The need for the ready availability of fuel, solvents, and chemicals and their safe storage make the safety can an indispensable piece of equipment.

Malpractices in the handling and storage of fuels and chemicals have been the cause of numerous explosions and fires, both in industry and the home. Newspapers frequently tell of petroleum vapors igniting with serious or fatal personal injuries and destruction. The judicious use of approved containers would prevent many of these accidents.

For fire-hazardous materials, approved portable containers should generally be painted red and also labelled to prevent mixing of liquids (See Figure 2.) Needless to say, these containers should be kept clean so color and labels can be seen at all times. Another precaution is to lock the storage space

Fig. 4—A sack placed inside of waste container allows easy removal of refuse.

BOAT REFUELING SAFETY

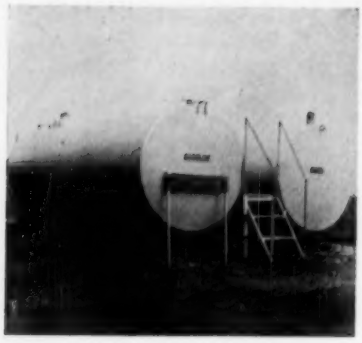

Fig. 7—Contents of land-based storage vessels are plainly stenciled.

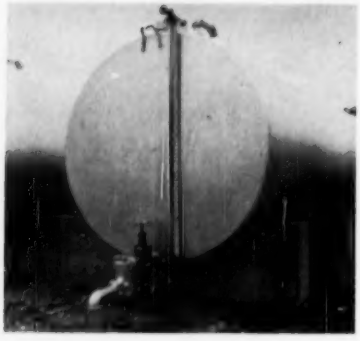

Fig. 8—Gauge glass affords automatic visible guage at ground level.

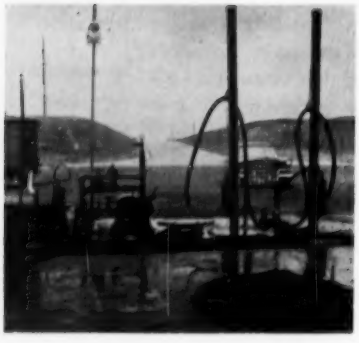

Fig. 9—Color of hose identifies fuel at dockside boat, barge filling station.

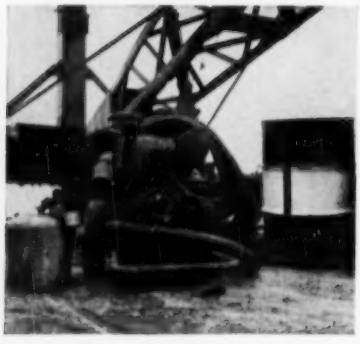

Fig. 10—All portable pumps on work units are refueled from safety cans.

(Figure 1.) so unauthorized handling will not cause liquids to be mixed or removed from containers.

Just as important as safety in the handling and storage of flammables and chemicals is the safe and effective disposal of residue and waste. Good housekeeping as well as safety is of major importance, so approved containers should also be provided for the safe disposal of flammables, chemicals, rags, debris, and other waste.

Waste Containers for Combustibles

Many industrial fires are the direct result of accumulations of oil-soaked and paint-saturated clothing, rags, waste, and combustible refuse. Such materials should be removed daily from the work area. The best preventives against spontaneous ignition are either total exclusion of air or else good ventilation.

When approved covered waste containers are used in buildings, consideration should be given to the location. Excess heat or sunlight from a nearby window might cause ignition.

Besides use of waste containers for rags, waste, and glass, there are isolated instances of special chemicals, such as mercury, which require separate containers for any residue. All waste containers should be properly labelled and used only for the items specified. Waste oil containers should be of the approved self-closing spout type.

A color scheme may be used to advantage for identification purposes, especially in work areas where there are several different types of waste such as in shops and laboratories. A suggested color scheme is red for oil or other solvent containers, yellow for glass and metal waste cans having a pedal-operated lid, aluminum color for clean or dirty towel storage cans. (Figure 3.)

Waste containers are generally removed to an accumulation area by the janitor force or other handymen. The waste handling by these employees also requires that they be instructed if any special precautions need to be observed. A sack insert in waste containers makes the removal of refuse easier

and keeps the containers cleaner (Figure 4).

Certain practices must be observed in the handling of flammables, especially gasoline. Whenever small motorized equipment is stopped for refueling, it should be allowed to cool before gasoline is poured into the tank. Hot engine exhaust could cause vapors to ignite. A further precaution is to maintain contact between the spout of the supply can and the receiving unit to prevent generation of static sparks and the ignition of vapors. Figures 5 and 6 show refueling procedures with approved types of supply cans.

Marine Operations

A specialized type of handling and storage of flammable liquids is required for marine operations. A typical boat-servicing installation in our own operations is a production district using eleven boats, seven with diesel engines and four with gasoline engines, plus two work-over barges.

The diesel powered boats use two 52-gallon fuel tanks maintained in horizontal position, and the gasoline engine boats have two 70-gallon stainless steel fuel tanks. No cans of flammable materials are carried on these boats under normal operating conditions. All boats have fuel system lines of copper tubing. There are no hose connections used. Diesel powered boats have fire extinguishers available in accordance with our company's standards, and gasoline powered boats are equipped with automatic fire systems.

Fueling of marine craft is accomplished from land-base storage drums. Each drum is plainly labelled (Figure 7) and has a safety device to eliminate gauging hazards. The automatic gauge glass provides visible gauging from ground level (Figure 8). Fuel flows from the gas storage tanks by gravity to the loading dock at the water's edge. Boats are refueled just as an automobile is serviced at a filling station. (See Figure 9) The supply hose for gasoline is red, and black or unpainted hoses are for diesel fuel.

The roustabout work-over barges have small pumps for wash-down purposes. Gasoline for these pumps is kept in a five-gallon safety can. (Figure 10) Diesel engines on each barge for supplying power to air compressors, generators, and welding machines are fueled from a 30-gallon tank. Reserve supply cans of 55-gallon drum of diesel fuel are kept in a rack near the fuel tank.

Pictures and material by courtesy of Humble Oil & Refining Co.

Eye Safety in Vocational Schools

A six-month safety experiment in New York City vocational schools has resulted in a 75 percent reduction of machine shop eye injuries, the recent 1957 Sight-Saving Conference learned.

Eye injuries dropped from 31 during 1954–55 to seven during a six-month period of 1956–57, following the provision of shatterproof safety spectacles to 4,000 machine shop students in 31 vocational schools, according to William T. Hudtwalker, Supervisor of Boys Trade Subjects.

Mr. Hudtwalker addressed close to 1,000 doctors, nurses, educators and social workers from the U. S. and eight Latin American nations attending a joint conference of the National Society for the Prevention of Blindness and the Pan-American Association of Ophthalmology in New York recently.

The eye protection program was established last Fall in cooperation with the Prevention of Blindness Society, following several years of experimentation to select the most practical type of safety eyewear, Mr. Hudtwalker said.

"Even during the experimentation period, machine shop eye injuries dropped almost sixty percent" he said, adding that the seven injuries recorded since the start of the full-scale machine shop protection program "were of an extremely minor nature." Mr. Hudtwalker said investigation of accident circumstances indicated that most of those injured were not wearing eye protection at the time.

The mandatory machine shop program was launched, Mr. Hudtwalker said, "to reduce the large

(Continued on page 67)

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(Use Key # E-25 on Inquiry Card on page 73)

Fire Protection Dollars Make Sense

by **T. SEDDON DUKE**
President, Star Sprinkler Corporation
Past-President, National Fire Protection Association

Direct Losses:

Last year we averaged 5,400 outbreaks of fire per day.

These fires caused a daily loss of nearly $3,400,000.

Indirect Losses:

The above figures do not include intangibles, such as:

Loss of pay checks
Loss of man-hours
Business failures
Hospitalization Charges
Loss of Orders
Tax losses

With these intangibles, the total losses could run into billions.

The Brighter Side:

Loss of life by fire decreased for the first time in many years, but it still amounted to about 11,700.

The Outlook:

There's little comfort in the early returns for 1957. Fire losses for the first three months are up 16.7 percent compared with the same period last year.

Fire and fire losses for 1956 have been classified and the estimates compiled by the National Fire Protection Association. The information is that there were approximately two million fires of all types in the United States in 1956, causing a monetary loss of $1,250,000,000. This was an increase over 1955 of approximately $109,232,000.

Over the years, there has never been anything to indicate that we secure a true picture of the loss of life and loss of property in the United States figures. When we consider the intangibles in the loss of life alone, we can appreciate the improbability, even the impossibility, of securing accurate figures. If a loss of life occurs directly in a fire, it becomes a news item. However, a burned person could die two weeks later and be simply another hospital death. No one knows how many millions of dollars have been spent on funerals, doctor bills, hospitals nor the dollar loss in man-hours, taxation and all the other things that are called "intangibles" but are just as much a part of the losses as any of the things we can definitely tie down.

Any loss of life and property by destruction from fire affects our economy. Fire can destroy both life and property. It can destroy

the continuity of business. It can destroy the productively and purchasing power of employees and it can remove from the community in which an industrial establishment operates, a taxable, going concern on which the community depends.

Picture, if you will, a small town, with about 5,000 people. This town may have one large industry in which, except for the shopkeepers and a few other small businesses, all of the people of the community are employed. Destruction of this industrial plant would be for that community a calamity of first proportions. If the plant were fully covered by insurance, it would take time to build a new plant, equip it with machinery and get underway. As a matter of fact, there is nothing sure about whether or not the plant would again resume operations in that community. Some other town nearby might have a building that would exactly answer the needs and, naturally, wanting to resume manufacturing as quickly as possible, the company

How Fire Can Destroy a Town Financially

CASE HISTORY 1: On Saturday, April 28, fire destroyed the Aircraft Engine & Parts Corporation at Grantham, Pa., with a loss of $3 million. Grantham has a population of 490 people. The fire flashed in a corner of the first floor, known as the Degreaser and Preservative Room. Great amounts of flammable solvents, oils and greases were stored in this area. The fire brought 38 employees with various types of extinguishers, including carbon dioxide, foam, and soda-acid, but the fire was instantly beyond the capacity of hand extinguishers. No automatic sprinkler system had ever been installed and the fire door, that possibly could have prevented total destruction, was evidently propped open and could not be reached.

CASE HISTORY 2: Another fire occurred on May 19, 1956 in the Garden State Tannery at Pine Grove, Pa. The loss was $2 million and all of the company records. Pine Grove has a population of 1300. Of these, 340 were employed in the tannery with the weekly payroll amounting to $30 thousand. Heat from the fire prevented the use of the yard system hydrants. The six tannery buildings that were destroyed were unsprinklered. The firm had originally started in 1906 and closed in the 1940's. It had been reopened in 1950 when a community-wide subscription drive raised enough capital to open the plant. Most of the townspeople were still stockholders in the reopened organization.

would seriously consider the move even though it would be calamitous to the former employees.

When we are talking about indirect and intangible losses, we can go down the line almost indefinitely. The loss of wages and salaries would affect everything from the storekeeper to the mortgageholder. The customers are gone because they cannot be served; contracts are cancelled; profits are lost on sales to say nothing of the loss of sales-potential during a prolonged shut-down. The property was probably built at a time of low costs and low overhead and had undergone many betterments. The records were lost and the inventories. If the plant had to be relocated that, too, would be expensive.

Even more graphic illustrations of what we are talking about are two actual cases that happened in 1956 and described in the section "How Fire Can Destroy a Town."

When a plant is lost through fire, in general, the factors contributing to occupancy hazards are as follows:

(1) Inferior construction and excessive areas exposed
(2) Lack of adequate private protection
(3) Lack of protection against severe exposure
(4) Excessive quantities of combustibles
(5) Unprotected vertical openings
(6) Flammable liquids
(7) Delayed alarm
(8) An inadequate water supply

Some or all of these hazards are present in every type of occupancy and, under proper conditions, they could contribute to the total destruction by fire of that particular occupancy.

To prevent this mass destruction of our economic resources requires not only a tremendous educational effort but an honest approach on the part of all concerned. No matter what we may have in the line of a selfish motive or point of view, we owe something to the community in which we live and work and we owe something to the country as a whole. A combined effort should be made on the part of all of those who have to do with insurance, the sale of equipment that will prevent destruction by fire, the various fire prevention committees in the cities and towns, the Chambers of Commerce, the fire departments, the Bureaus of License and Inspection, the Fire Marshal's office and anyone and everyone who believes honestly in their hearts that destruction by fire is wrong and that we should all make a maximum effort to do something about it.

If there is any conclusion to be drawn, it is that we need to do a better job in the protection of our homes, our businesses, and our places of assembly. We can also draw the general conclusion that we need to probe further into the devastation of fire so that we can uncover the truth about the vast intangible losses. Certainly, uncontrolled fire is the arch enemy of commerce and industry and these are the lifeblood of our economy.

It is evident that a gigantic educational program at all levels of commerce and industry is in order. First of all, however, management must be sold and kept sold not only on the importance of a fire prevention program within their plant but sold on the importance of fire protection equipment and its maintenance. It is all right for us to say that the preservation of the economy from destruction by fire is the responsibility of management, but it is equally true that those of us in fire prevention, fire protection, fire insurance, etc. have the educational duty to inform management.

In many cases, management does not appreciate its full responsibilities. Some of them have never had a fire, therefore don't expect a fire and make no preparations. Under these conditions, we can't expect too much of management until it has been informed as to its responsibility. It might be said that the personal hazard is directly proportional to the general attitude of fire consciousness that pervades the personnel from the top to bottom. Are they, as a whole and as individuals, careful people? Do they unconsciously appreciate the possibilities in respect to fire hazards and act accordingly? Of course, this could be immediately determined by talking with them. But even if we had this knowledge, we still have an educational duty to perform.

How can management be best informed and made to feel its responsibilities? Local Chambers of Commerce have a Fire Prevention Committee which should have a program that would inform him as to fire hazards and his responsibility. He could be informed also through the fire checks of his city's fire department or the Fire Marshal's office, or the Bureaus of License and Inspection. A great many of these uninformed members of industry could well look to their fire insurance counsellor to tell them something about the fire hazards within their plants. Certainly, one very important educational medium at our command is an associate membership in the National Fire Protection Association.

An alert, informed manager has rules in respect to fire safety and fire protection within his plant and if he himself is safety-minded, he can secure the cooperation of his employees in making his plant fire-safe.

The statistics in Table 1. have been given many times but they bear repeating.

TABLE 1: How Fire Can Destroy a Business

Of the concerns suffering severe fires, 43% are unable to resume operation.
17% who were able to furnish financial statements before the fire are no longer able to do so after a fire,
14% suffer severe reduction from 30% to 66% of their credit ratings,
26%, unaffected as to their credit rating, nevertheless suffer severe loss in their orders.

Indirect fire losses usually run five times higher than actual physical fire damage to an industrial plant, according to the best estimates possible.

The Salem, Massachusetts, conflagration of June 25–26, 1914 may seem to have little meaning for us today but the National Fire Protection Association's report is still pertinent: "Sixteen-hundred buildings in thirteen hours. Two-hun-

dred-and-fifty acres of desolate ruins; Fourteen-million dollars of value in the work of men's hands; that is the first cost of Salem's disaster. . . . Over 11 million, 700,000 dollars of this is to be replaced involuntarily by the American people. This vast sum, spread over the continent through fire insurance premiums as a tax upon clothing, shoes, hats and food, must make the struggle of life harder for millions of Americans who thus contribute to rebuild a city which without their sacrifices could not cover its nakedness in half a century.

"Salem has put her hand in every American pocket to collect the cost of a devastation and ruin she might easily have avoided."

While we have progressed somewhat in that we do not have conflagrations of the Salem type today, under a proper set of conditions we could again have fires infinitely more costly. Compared to 1956's fire losses, Salem was peanuts! In the aggregate, our losses today would encompass many Salems and you could throw in Fall River, Nashua and at least one Livonia.

This report of 43 years ago is brought to your attention for a specific reason.

Let's not kid ourselves that just because we don't have a fire we aren't paying for the other fellow's fire. No fire insurance company could exist on the premiums paid by only those who have fires and, if they could exist, those who have fires could not afford the insurance. If you feel a hand on your wallet, it is attached to the arm of the fellow who is collecting premiums from you to pay for his fire. Fire insurance companies are no different from our Federal Government. They have no money except what is collected from you and you. Therefore, fire or no fire, you pay for all fires. Surely this is one more good reason for an industrial and business fire prevention program. No serious reduction in fire insurance rates is possible until we, throughout the country, come up with fire prevention programs so effective that the national fire loss will be materially lessened.

Picture by Akron Beacon Journal.

Eye Safety

(from page 63)

number of potentially dangerous eye accidents occurring in school shops. These accidents—two of them resulting in students' loss of an eye—occurred despite the fact that school shops were equipped with protective devices whenever hazardous operations were involved. The failure of this system stemmed from the inordinate amount of teacher supervision required to secure compliance."

"In many industrial organizations" he said, "workers wear protection for the full duration of their work period. This practice is not merely encouraged, nor is it permissive. It is definitely a condition of employment and is accepted as such by the workers.

"The same hazards exist—indeed to a greater extent—in school shops. For this reason alone mandatory eye protection for the full duration of the work period had to be a condition of instruction."

The New York City program covers 4,000 of the city's estimated 30,000 full-time vocational students. Machine shops were selected for a two-year demonstration because of the frequency of eye injuries there.

He said one of the city's problems was finding a type of safety eyewear "which afforded sufficient protection and which pupils would wear continuously for the full duration of their period in the shop." Although safety spectacles with shatterproof lenses do not afford complete protection, they are reasonably comfortable, pleasing in appearance, and what is more important— pupils will wear them." Teachers in the machine shops are also required to wear safety glasses.

Schools throughout the country are inaugurating eye safety programs, according to James E. O'Neil, Director of Industrial Service of the National Society for the Prevention of Blindness. As an incentive, the organization has extended its Wise Owl Club of America to these students. The Club honors men and women who have saved their vision by wearing eye protection in industrial jobs, and now in school shops, industrial arts classes and science labs. More than 11,000 industrial workers have been so honored since the club was organized in 1947.

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(Use Key # E-26 on Inquiry Card on page 73)

This man is looking into your future

How does it look? Rosy? Free of cancer? You hope! But hoping isn't enough. Of every 6 Americans who get cancer this year, 3 will die because science still has no cure for them. It will take research . . . *lots* of research . . . to find that cure. And research, let's face it, takes money. Pitch in and help. Send a generous check . . . right now . . . to "Cancer" in care of your local Post Office.

American Cancer Society

Combustible Linings in Air Ducts

Two fires, one in an office building in Los Angeles, and another in a theatre in New York City, present striking illustrations of the serious hazard of combustible linings in air ducts. These fires occurred a number of years ago but the lessons they taught continue to be applicable today. This subject is of importance because of the general practice of lining portions of the air ducts of air-conditioning systems with a sound absorbing material, and because of the growing use of air-conditioning in buildings of all types, warns a bulletin of the National Board of Fire Underwriters.

Office Building Fire

The Los Angeles building was of large area, ten stories high, of reinforced concrete construction, and occupied by stores on the first floor with offices above. An air-conditioning system served the nine office floors.

The air-conditioning equipment was located on the roof and drew air through ducts from the corridors of each floor served, dehumidifying and cooling it, and blowing it down through other ducts to the various rooms. Air from the rooms escaped to the corridors through louvers in the doors.

The duct work branching from the air-conditioning equipment to the vertical ducts leading to the several floors was located in a space between the ceiling of the top story and the roof. To prevent noises from the fan and sounds of rushing air from being carried to the rooms, over 9,000 square feet of a wood fibre-board lining was used in the ducts in this space.

The origin of the fire is not definitely known; it may have been associated with repair work which was done that night on some of the service piping in the attic space.

When the air-conditioning system was started early in the morning, smoke began to issue from the system. The engineer, who had gone down to the basement, quickly returned to the roof to shut it off, but the few minutes of operation started the lining to burn freely. The fire department had been called promptly but found the fighting of the fire in the air duct an exceedingly difficult task. The result was a very large amount of smoke and water damage on several floors of the building. If the fire had occurred during office hours the consequences could have been far more serious.

Theatre Fire

The fire in New York City involved a theatre of fireproof construction, equipped with an air-cooling system. The refrigerating machinery was in the basement of an adjacent building, from which the cooled air was carried by a large sheet metal duct to the auditorium of the theatre. For a total length of about 160 feet this duct ran along the outside of the theatre in a court. This portion of the duct was lined with a combustible fibre insulating board.

At about 5 p.m. a fire started in some rubbish piled in a corner of the court against the duct. This was extinguished by several buckets of water, but the combustible lining of the duct had become ignited. The progress of the fire at first was slow for the system was not in operation, but after an hour or two, smoke, hot gases and sparks from the burning insulating material began to discharge downward, in the theatre, igniting balcony seats and furnishings and blistering the wall and ceiling finish. Firemen entering the lobby were met with a shower of sparks from a duct opening at that point. Two operators in the projection booth had to escape out a window of the booth. Smoke, fire and water combined to make a large loss. The small audience of 150 to 200 persons left without mishap, but if the 3,350 seats in the theatre, and especially those in the balcony, had been filled the loss of life from fire and panic might have been large.

These two fires demonstrated that combustible linings in air ducts constitute a serious fire hazard which may result in danger to life. Where smoke or fumes from the ventilating system would be apt to cause panic, combustible linings should be prohibited.

Duct Standards

The Standards of the National Board of Fire Underwriters for the Installation of Air Conditioning and Ventilating Systems of Other Than Residence Type, NBFU No. 90A, require air ducts to be constructed of noncombustible material, such as iron, steel, aluminum or other approved material, and require that only fire-resistive linings shall be used inside of ducts. The same requirements are contained in the Code for the Installation of Heat Producing Appliances, Heating, Ventilating, Air Conditioning, Blower and Exhaust Systems, recommended by the National Board of Fire Underwriters.

Low Hazard Linings

The requirement that linings inside air ducts be fire-resistive is intended to mean that they should be of low fire hazard, that is, be resistant to ignition and burning to a high degree. Any material listed in Underwriters' Laboratories, Inc. Fire Protection Equipment List under the heading Building Materials—Hazard Classification (Fire) with a flame spread rating not higher than 25 without evidence of continued progressive combustion, and with a smoke developed rating not higher than 50 or designated "Light" or "Negligible" may be considered as meeting the requirement for a fire-resistive lining material.

inside the trade

The new West Coast Materials Handling Plant now being completed at San Leandro, California by *THE YALE & TOWNE MANUFACTURING COMPANY*, will produce a completely new line of Yale heavy duty gasoline fork lift trucks with load capacity of up to 20,000 lbs.

The new $2,500,000 plant will also produce complete lines of the standard Yale gas, LP-Gas, and electric-powered fork lift trucks. At a later date production will also begin on bulk materials handling equipment including tractor shovels.

Charles H. Galloway

At the annual meeting of *AMERICAN OPTICAL COMPANY*, *Charles H. Galloway*, general manager of the company's Safety-Sunglass Division, was elected a Vice President.

Mr. Galloway has been associated with American Optical Company since 1914, when he began work as an office boy. He later joined the Sales Department and served in many areas until, in 1929, he joined the Safety Products Division, which he subsequently headed as general manager.

He has long been active in the Industrial Safety Equipment Association and the National Safety Council.

Richard Krause, President of the *SAFETY-FIRST SHOE CO. INC.*, of Holliston, Mass. announces the appointment of *Lou Kreamer* of Baltimore as Sales Manager of The Railroad Sales Division of the Company.

Kreamer is well known among Railroaders as an authority on Foot Safety, having served as District Manager for the Company for several years. The Safety-First Shoe Co., Inc. is sponsoring an outstanding new kind of FOOT SAFETY CAMPAIGN designed to assist Railroad Safety Directors and their staffs in impressing the need for Foot Protection on Railroad Workers. Mr. Kreamer will maintain his office at the factory in Holliston, Mass.

William George Beggs, Jr. has been appointed Western Division Manager for the *BUFFALO FIRE APPLIANCE CORPORATION*, Dayton, Ohio, and will cover the entire West Coast from Mexico to Canada.

He first joined Buffalo in 1947 as district manager of the Southwest territory. Recently he has been in charge of the company's East Central territory.

THE CHICAGO EYE SHIELD COMPANY has appointed the *Car-Mad Equipment Company*, with offices at 608 Palm Avenue, Belleair, as its distributor for the state of Florida. *Carl L. Ploch*, formerly regional sales manager for the *Silicone Paper Company of America*, heads this newly formed distributorship. In addition to the Cesco line, the Car-Mad Company will distribute a complete line of supplementary safety equipment of other leading manufacturers.

This year marks the twenty-fifth year of *JUNKIN SAFETY APPLIANCE CO.* in the industrial safety equipment field. The Junkin organization, with headquarters in its newly constructed building at 3121 Millers Lane, Louisville, Kentucky, is recognized as a leader in the manufacture of guards for protection against power press accidents.

John Junkin is President and Chief Designer.

John B. Davies

John B. Davies has been elected assistant vice president of *MINE SAFETY APPLIANCES COMPANY*, Pittsburgh, *J. T. Ryan*, president, has announced. Mr. Davies, who was formerly manager of industrial sales, will serve in the newly-organized Industrial Products Group. He is president of the Industrial Safety Equipment Association and a member of the American Society of Safety Engineers, the American Industrial Hygiene Association and the International Association of Fire Chiefs. He is a past president of the Veterans of Safety and a district director of National Sales Executives.

Appointment of *Arthur L. Shirley* as sales promotion manager of *SPECO, INC.*, Cleveland hardware and maintenance product manufacturer, is announced by *J. O. Vinney*, president. A

FOR SAFETY SAKE

FOR SAFETY SAKE specify Safe-Hi SHOCK ABSORBER

Safe, practical attachment for Life lines. Has N. Y. State approval. Cushions the jolt of a fall. Easily secured (no knots to tie), can be moved up or down, CANNOT be accidentally dislodged from rope.

Your safety equipment dealer will give you full information . . . or write to:

ROSE MANUFACTURING CO.

Safe-Hi DENVER

2700 W. Barberry Place

(Use Key # E-28 on Inquiry Card on page 73)

Store Safely

gasoline • kerosene or any flammable liquid!

VENT-A-DRUM automatic SAFETY VALVE

protects against dangerous explosions!

The Vent-A-Drum prevents dangerous explosions which occur from fires and sudden temperature changes when storing flammable liquids, by automatically allowing air to enter or escape container. In addition to protecting property and lives, Vent-A-Drum pays for itself by reducing fuel evaporation 50%! Used by leading firms, approved by Factory Mutual Testing Laboratories. Precision-engineered, never requiring adjustment or replacement of parts. Cast Bronze. Completely guaranteed.

Dealerships and literature available.

CENTRAL Safety Equipment Co.

6402 MARSDEN ST. PHILA. 35, PA.

(Use Key # E-29 on Inquiry Card on page 73)

Arthur L. Shirley

graduate of Boston University, Mr. Shirley was formerly associated with The Gibson Homans Co., Cleveland, the Minneapolis-Honeywell Regulator Co., and General Dry Batteries Co., Lakewood, Ohio.

In his new position, Mr. Shirley will direct promotional activities and advertising for Speco's 65 products. He also will be in charge of the introductory campaign for Easy-Cut, a new lawn mower spray that stops grass from sticking to blades and housings.

MACK TRUCKS, INC., accelerating expansion of its fire apparatus division, has announced the appointment of *Brook J. March* as fire apparatus representative for industrial sales. He will supervise the industrial sale of standard fire apparatus as well as special foam-making units. He graduated from Lehigh University as a chemical engineer and has served both as a technical consultant as well as sales executive for various industrial firms, including manufacturers of fire equipment and special foam-making apparatus.

John L. Taylor, vice president in charge of sales for the *EDWARDS COMPANY, INC.* has been elected executive vice president and a member of the board of directors, according to an announcement by *R. Stafford Edwards*, president.

Mr. Taylor was graduated from Dartmouth College in 1922. He was appointed general sales manager for Edwards at Norwalk in 1950. In 1955 he was elected vice president in charge of sales. He also serves as Edwards representative in the National Electrical Manufacturers Association.

CHAMPION MFG. CO. has appointed *Robert Burg* as factory representative for the company in Northern Illinois and Wisconsin, according to an announcement by *Alan Fleishman*, Sales Manager. Burg will be responsible for coordinating sales and distribution of masonry and concrete saws and blades in the area.

FISHER SCIENTIFIC, leading manufacturer-distributor of laboratory instruments, apparatus and reagent chemicals, has purchased the laboratory apparatus and supply business of *E. Machlett & Son*.

Fisher will continue the 60-year-old firm as a division, in its present location at 220 East 23rd street, New York. *Frank Donics*, formerly sales manager of the Fisher Pittsburgh plant, becomes *general manager* of the Machlett Division.

SAFETY APPOINTMENTS

Appointment of *Grant O. Shibley* to the post of Safety Director of The American Welding and Manufacturing Company, Warren and Niles, Ohio, has been announced by J. A. Carpenter, director of industrial relations.

Mr. Shibley, formerly senior engineer for the National Safety Council, Chicago, is a veteran of 15 years in the safety field. Before his association with the Safety Council, he was safety director of the Ohio Boxboard Company, Rittman, Ohio. He served as assistant safety director of the Goodyear Tire and Rubber Company, Akron, for five years prior to joining Ohio Boxboard.

Harold E. Wersen has been appointed Regional Safety Engineer for Region I, Bureau of Reclamation. Region I comprises the states of Idaho, Oregon, Washington and portions of Wyoming and Montana. Wersen during the past nine years was the Columbia Basin Project Safety Engineer. *M. E. "Mike" Flynn* will take over the duties on the Columbia Basin Project.

Wersen is a charter member and past chairman of both the Puget Sound Chapter and the Spokane Chapter A.S.S.E. He is a graduate Sanitary Engineer and has over thirty years of experience in the Accident and Preventive Health field. He attended Washington State College and the University of Minnesota. His headquarters will be Ephrata, Washington.

New FEMA officers, left to right: Walter E. Morgan, Jr., president; A. S. Symonds, 1st vice president; Harold A. Strain, 2nd vice president; Paul Nurkiewicz, treasurer.

Walter E. Morgan, Jr., industrial sales manager for Walter Kidde & Company, was elected president of the *FIRE EQUIPMENT MANUFACTURERS' ASSOCIATION* at FEMA's annual meeting in New York City.

Other officers elected were first vice president, *A. D. Symonds*, treasurer of W. D. Allen Manufacturing Company; second vice president, *Harold A. Strain*, sales manager, fire protection equipment, American LaFrance Corporation; and treasurer, *Paul Nurkiewicz*, vice president, Stop-Fire, Inc.

In addition to elected officers the Board of Directors of FEMA include: *E. H. Hansen*, president, Elkhart Brass Manufacturing Company, Inc.; *George F. Clark*, vice president in charge of sales, The General Detroit Corporation; and *W. E. Tromanhauser*, vice president and general sales manager, Pyrene-C-O-Two Division, The Fyr-Fyter Company.

James C. Forbes, Jr., Sewickley, Pa., has been appointed Staff Assistant in the Training Department of *JONES & LAUGHLIN STEEL CORPORATION'S* Aliquippa Works. Mr. Forbes joined J & L after serving as Assistant Personnel Supervisor at Blaw-Knox Company, Wheeling, W. Va. Before that, he was a Safety Supervisor for Blaw-Knox in Coraopolis, Pa.; Senior Safety Inspector for American Steel Foundries, East Chicago, Ind.; Labor Analyst and Safety Analyst for Standard Oil Company, Chicago, Ill.; and Assistant Personnel Supervisor for Standard Oil in Casper, Wyo.

A. G. Lane has been named to the newly-created post of Director of Training and safety for the Powder Actuated Tool Manufacturers' Institute, it has been announced by Richard F. Webster, Secretary of the Institute. Mr. Lane has been associated with the powder actuated tool fastening business for several years.

In his new position he will be responsible for the development of training and safety programs, including on-the-job training, throughout the country. His services will be also available to State and Municipal Industrial Safety Organizations for establishing and drafting codes to control safe use and operation of powder actuated tools as well as to affiliated labor organizations at both a local and national level.

Charles R. Williams of Wellesley Hills, Mass. assumed his duties as president of the American Industrial Hygiene Association at its week-long annual meeting.

Williams, who is assistant vice president of Liberty Mutual Insurance Company and director of the company's industrial hygiene services, succeeds Lester V. Cralley of Aluminum Company of America as head of the association.

The Massachusetts man, who is also associate professor of applied industrial hygiene at Harvard University School of Public Health, is a member of the Acoustical Society of America and is chairman of the inspection committee of the Mutual Atomic Energy Insurance Pool.

The appointment of *Kenneth I. Crosier* to the newly created supervisory position of Safety Engineer in Kaiser Engineers was announced today by Company Vice President and Assistant General Manager, L. H. Oppenheim.

Now headquartered in the firm's Oakland main office, Crosier will be primarily responsible for supervision and coordination of safety and accident prevention activities on all of the company's projects throughout the United States. He will report directly to Jack W. Walling, Kaiser Engineers' manager of industrial relations.

Crosier has a background of 22 years experience exclusively in construction and industrial safety work. He first joined the Kaiser organization in 1938 as a safety inspector on Grand Coulee Dam. Since that time he has managed Kaiser Engineer's safety activities on a number of their major U. S. projects including the Portland Shipyards, Detroit and Big Cliff Dams, and the Hanford and Idaho Falls Atomic Energy Commission projects.

Material appearing in this section is published as information and is not intended to imply endorsement or guarantee by SAFETY MAINTENANCE.

To obtain descriptive literature of products listed, use Reader's Inquiry Card. Write in code number given each item. Send written requests to: Service Dept., SAFETY MAINTENANCE.

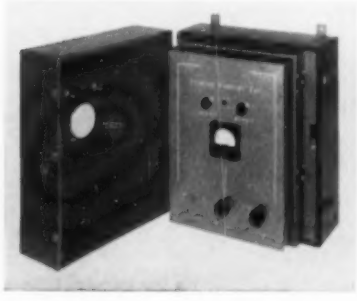
what's new for JUNE

ELECTRONIC MACHINERY GUARD

(Use Key # 855 on Inquiry Card on page 73)

AN electronic safety control which sets up a capacitance field around the danger area of machinery so that a person, or person's hand, in this area is instantly recognized and an electrical signal sent to the machine braking mechanism. The size and shape of the safety field are determined by the positioning of the sensing element and control adjustments. The machine will not operate with a person in the field unless, as is sometimes desired, it is cammed out on the upstroke to increase production.

Failure of any electronic component causes the machine to stop. Tubes are readily accessible for checking, and the inner chassis is removable. Cabinet is shock mounted and gasketed, and has a lock and key. Installation can be accomplished by plant personnel, while simple control adjustments, meter, and indicator lights facilitate set-up. Sensing elements of differing sizes and shapes may be used to achieve the set-up of a particular field desired to protect a specific area. Made by Security Controls, Inc.



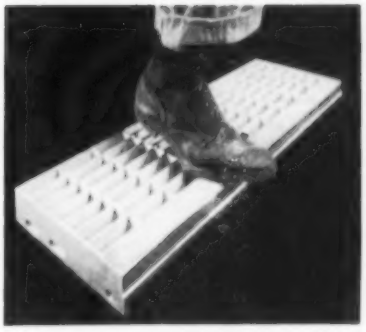
CARDBOARD CONTAINER NON-SLIP COATING

(Use Key # 856 on Inquiry Card on page 73)

A NEW product of significance for corrugated container manufacturers and users has been introduced by Paisley Products, Inc. It is named Non-Slip Container Coating No. 1715. The coating permits the stacking of smooth-top containers for in-plant handling or over-the-road shipment without danger of their toppling from pallet, conveyor or truck.

The "before-and-after" accompanying photograph shows a 5-mile-an-hour sudden-stop test with identical 55-lb. filled containers. With the untreated containers, 9

of a pallet-load were thrown to the ground. With the treated containers, none shifted more than 2 or 3 inches, and the load stayed firm. Were a stop like this to have been made with forks in the elevated position the hazard, as well as the product damage, would have been greater yet. The new container treatment is equally useful for resisting in-transit vibrations of tall stacks of packed goods in intercity shipment, by either truck or rail. The product is an instant-drying sprayable copolymer resin emulsion which leaves an invisible film slightly detectable to the touch. Application on the box blank at the corrugated container manufacturing plant interferes in no way with later container-making steps, nor carton sealing at the container-users' plant, the company claims.



ALUMINUM STAIR TREAD

(Use Key # 857 on Inquiry Card on page 73)

A PRECISION-cast aluminum stair tread that combines safer footing with long-term maintenance savings has been marketed by the Aluminum Company of America. Designed for use in industries where stairs are subject to extreme weathering or corrosive atmospheres, the aluminum die-cast tread utilizes a slip-proof abrasive nosing. It provides a step which requires no protective coatings. An aluminum alloy insures high corrosion resistance and strength, to afford long maintenance-free life. Dirt, it is claimed, will not collect in the rounded, joint-free corners. Although designed to carry the weight of a heavy man, the stair has withstood loads in excess of 3,000 pounds. Fused aluminum oxide abrasive, metallurgically bonded to aluminum plate, provides a rough slip-proof front surface, the point at which slips usually occur.

Three finishes are available: the "Structural Finish," for standard structural purposes; the "Polished Finish," for packing plants, bakeries, and other food processing

plants; and the "Marine Finish," for treads subjected to sea water immersion and spray. Sizes available range in length from 24 to 42 inches. Width is standard at 10 inches but special widths are obtainable.

METAL FIRE EXTINGUISHING SYSTEM

(Use Key # 858 on Inquiry Card on page 73)

A PIPED fire extinguishing system utilizing Met-L-X dry powder has been marketed by the Ansul Chemical Co. The system is designed to give protection against metal fires in areas where use of manual extinguishers is impossible because of radiation hazards or because of the denser, caustic smoke characteristic of liquid-metal fires. Met-L-X is said to be especially effective on fires in such liquid metals as sodium and NaK. Ansul's piped system may be activated manually or by heat-actuating devices. Usually, extinguishing agents for metal fires are applied with scoops or shovels.

The Met-L-X system extinguishes liquid metal fires by discharging dry powder through nozzles installed over the hazard areas. Piping is so situated as to coat all vertical surfaces and at the same time distribute an even layer of Met-L-X over flooring to guard against fire from spilled metal. The Met-L-X supply for the piped system is located apart from the liquid-metal hazard area, leaving it free both from flames and toxic fumes. The agent is reported to consist primarily of sodium chloride specially compounded with materials that are both water-repellent and sufficiently free-flowing to be applied through piping systems and hoselines under pressure.

VAPOR STEAM CLEANER

(Use Key # 859 on Inquiry Card on page 73)

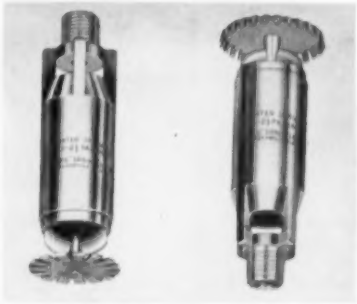
THE VAPOR Heating Corp. has introduced its new Vapor Steam Cleaner Model "45" which will produce a steady jet of steam at 120 pounds pressure for cleaning tractors, automobile engines, factory equipment and other tough steam cleaning jobs. The cleaner is said to consume only 1¼ gallons of #1 fuel-oil per hour to turn forty-five gallons of water per hour into an effective steam cleaning jet. The venturi type solution lifting steam cleaning gun will mix a concentrated alkaline cleaning solution with the steam to help cut through packed-on greasy dirt. The equipment being cleaned may then be rinsed with clear steam, ready for painting.

A ½ hp 110 volt motor, with an overload cut off, drives the positive displacement water pump. The water is turned into steam as it is pumped through the coils which are heated by the efficient, forced draft fuel-oil or city gas fuel fire. A float control keeps an ample supply of water in the tank for the coils. The fuel oil tank holds enough fuel to do four hours of steady steam cleaning. The safety valve is set at 175 psi. The cleaner "45" includes steam cleaning gun, 16 feet of heavy duty wire-braided steam hose and cleaning solution hose, all ready to operate. Two types of burners are available, one for burning kerosene or #1 fuel-oil, another for burning city gas or propane. The standard model is not equipped with wheels; however, a three wheel kit is available.

COMBINATION SPRINKLER HEADS

(Use Key # 860 on Inquiry Card on page 73)

NEW DESIGNS for both an upright and pendent sprinkler head for use in combination airfoam and water spray fire protection systems have been announced by the "Automatic" Sprinkler Corp. of America. The pendent sprinkler head permits



adaptation of water sprinkler systems to the combination use in special hazard situations without re-piping, even where space is limited between present piping and ceiling.

The new sprinkler heads first discharge a large volume of thick foam to blanket "spill" or surface fires, then produce a water spray. A pre-determined quantity of foam-producing material automatically introduced into the system produces the foam blanket before the regular water spray issues from the same head or nozzle. The water spray is said to provide additional protection to surrounding surfaces from "torch" fires at broken chemical or fuel lines. The additional safety factor offered by the water spray does not diminish the protection established by the foam blanket, which maintains its effective fire-smothering consistency for approximately one-half hour under the water deluge. Manual controls on the system permit change to the water spray at any time during the foam discharge and also permit the laying of a blanket of foam as a fire preventive at any time, without the shower of water.

NEW STEP STOOL

(Use Key # 861 on Inquiry Card on page 73)

A NEW step stool designed to assist personnel in safely reaching materials in high locations has been announced by The Cleveland Ladder Co., Inc. Although weighing only 8½ lbs., it is constructed to withstand hardest handling and loads up to 500 lbs. In addition to being solid riveted at all joints, it is reinforced with 4 supports and 2 rungs. Top is made from ¾" marine plywood to provide strength and abrasion resistance.

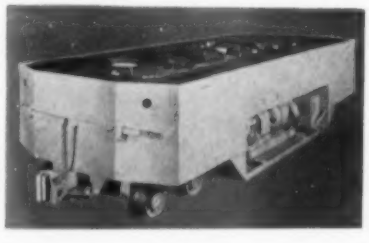
The step stool is recommended for use in stock rooms, tool rooms, maintenance departments, file rooms, cafeterias and on assembly lines or other jobs where material is shelved. The top is 15½ by 11½ inches and the stool stands 15 inches high. A special hand slot in the top facilitates carrying from one location to another. According to the manufacturer, the stool meets all A.S.A. standards.

MINE FIRE TRUCK

(Use Key # 862 on Inquiry Card on page 73)

A NEW, highly-mobile mine fire truck has been designed for swift delivery of a water "payload" with volume and pressure sufficient to combat stubborn underground fires. The Model 2100 mine fire truck is a product of Mine Safety Appliances Co. Although it has a capacity of 2,100 gallons of water and motor and pump assembly to deliver heavy streams as desired, the mine fire truck is a compact, low-slung unit which can negotiate a No. 2 turnout with ease, it is reported. It has standard eight roller bearing wheels with five-inch tread for extra maneuverability. The all-steel unit is built for hard wear, with all plate intersections triple-welded at the joints. Because of its rugged construction, the unit can remain underground at all times, the company claims. Its fire hose is impervious to oil, acid, rot and vermin.

The standard unit is 18 feet long, seven feet wide, and 50 inches high. Interior finish is bituminoid coating. Baffle plates prevent water surging while the truck is



FREE BULLETINS & CATALOGS

As a convenience to executives, these new publications of manufacturers are offered by the Reader Service Department of SAFETY MAINTENANCE. To obtain copies write in the key numbers on the free-postage card below.

ATMOSPHERE CONTROL

Carbon Monoxide Analyzers 320
Mine Safety Appliances Co. Continuous carbon monoxide analyzers are described in this four-page folder. The analyzers, which detect the accumulation of dangerous gas concentrations, are effective in metallurgical plants, vehicular tunnels and garages, coke oven and gas manufacturing plants, test chambers, etc.

Dust Collectors 321
Kirk & Blum Mfg. Co. Fully-illustrated folder on centrifugal dust collectors describes in detail two new-design types, and explains the wide range of industrial applications for each. Complete specifications are included, as well as information on collector selection through determination of particle size, etc.

Catalytic Purifiers for Vehicles .. 322
Oxy-Catalyst, Inc. An account of the use of LP-gas-powered equipment inside a vehicular tunnel is offered in this illustrated bulletin. The literature describes in text, photograph and chart the operation of two concrete-mixer trucks equipped with catalytic purifiers and the tests made by state officials in granting authority to operate the trucks.

PERSONAL PROTECTION

Lineman's Safety Equipment 323
The Surety Rubber Co. Multi-paged brochure offers a variety of linemen's safety items such as gloves, glove bags, boots, blankets, blanket clamps, sleeves, etc. Information details available sizes, electrical resistance, properties, and includes illustrations and drawings.

Waterproof Clothing 324
John E. Dorsey Co. Featured in this 10-page catalog is a full line of waterproof clothing intended for both outdoor and industrial workers. The wide selection includes suits, coveralls, jackets, hats, boots, etc.

Industrial Gloves 325
Jomac Inc. Well-illustrated booklet details a line of terry cloth gloves for a host of industrial applications. The gloves offer protection against many hazards including heat, flames and sharp or rough objects. The versatile cloth is also available in the form of boot liners, aprons, spats and other special items.

FLOORING & MAINTENANCE

Grating & Treads 326
Blaw-Knox Co. This informative, illustrated bulletin presents descriptions on electro-forged, riveted, rectangular, diagonal, "U" type and "T" interlocked grating and treads. Tables on safe loads and information necessary to specify are also included.

Floor Absorbents 327
Oil-Dri Corp. of America. A floor absorbent for oils, greases, fats, acids and soluble oils is explained in this bulletin. The fire-safe, non-combustible product is non-abrasive, but provides non-slip underfooting to reduce the danger of slipping accidents.

Floor Maintenance 328
U. S. Sanitary Specialties Corp. 4-page brochure features a floor maintenance guide chart based on a brand of floor products. Four stages, preparation, treatment, finish and maintenance, comprise the program and under each are listed specific product recommendations for each type of floor.

FIRE PROTECTION

Fire Detection Systems 329
J. H. Scharff, Inc. Illustrated 12-page brochure describes a rate-of-temperature-rise fire detector. The system operates on a pneumatic principle and triggers an electric alarm at the first unusual rise of temperature in a protected space. In case of line power failure these systems are equipped with a reserve 80-hour battery source of electricity.

Fire Resistant Hydraulic Fluid ... 330
E. F. Houghton & Co. Described in this 4-page folder is a fire resistant hydraulic fluid that also provides rust protection, foam resistance and increased oiliness. It includes information of its applications, physical properties, and methods of change-over from petroleum oil to the fluid.

Flammable Liquids Faucet 331
Economy Faucet Co. A stainless steel faucet for the safe dispensing of flammable and corrosive fluids is described in this illustrated bulletin. This fume-tight, self-closing chemical faucet is suited for use with solvents, essential oils, chlorine-free bleaches, oxidizing agents, caustic solutions and many acids and acidic liquors.

Fire Extinguishers 332
Leeder Mfg. Co., Inc. Outlined in this illustrated folder is a brand of small-sized dry chemical extinguishers bearing the approval of UL. Construction details, applications, and size information are given for the extinguishers intended for use against Class B & C fires.

FOOT PROTECTION

Safety Shoes 333
Hy-Test Safety Shoe Div., International Shoe Co. 32-page brochure illustrates and describes over ninety safety shoe styles, available in more than 6,500 different designs, lasts, sizes and widths. Charts provided indicate which shoes are available in a specific style, for a special use or with any certain feature.

(Continued next page)

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FREE BULLETINS & CATALOGS: Insert the key numbers shown on this page.
KEEPING UP WITH RECENT DEVELOPMENTS: Insert the key numbers shown on items in special feature article.

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June, 1957 Please send me the following free data

Free Bulletins (Cont'd)

Wooden Sole Footwear 334
Reece Wooden Sole Shoe Co., Inc. Wooden sole safety shoes and boots for a variety of industrial uses are explained in this illustrated folder. Styles are available for workers in factories, steel mills, oil refineries, etc., including acid and water resistant types.

Rubber Footwear 335
Beacon Falls Rubber Footwear. 4-page brochure details a line of industrial rubber footwear. Many of the various styles of work rubbers, buckle gaiters, boots and pacs may be obtained with steel toe protection, if desired.

MISCELLANEOUS

Respiratory Protection 336
The Cycle-Flo Co. This 36-page booklet gives a basic understanding of how and why man breathes. It covers such subjects as normal oxygen needs, resuscitation, inhalation, toxic breathing problems and protective breathing apparatus.

Electronic Machine Guard 337
General Automation Corp. Detailed booklet explains an electronic machine guard for power presses, brakes and shears having a mechanical clutch, although other models for air and friction clutches are available. Fully illustrated, the booklet offers installation and operating instructions, price information and typical automatic set-ups.

Laboratory Furniture 338
Fisher Scientific Co. This 24-page illustrated bulletin describes and gives detailed specifications for over two dozen interchangeable furniture units for laboratories. Included is a section devoted to instructions on how to plan a laboratory, select rooms and units, and handle installations.

Automatic Paint Spray Machines. 339
The DeVilbiss Co. Illustrated catalog explains a line of automatic transverse spray finishing machines. Transverse machines of four types are included (horizontal straight; horizontal contour; vertical straight line and vertical contour machines) to suit various industrial needs.

What's YOUR Problem?

- **Has an accident or fire interrupted production?**
- **Want to know how to prevent it?**
- **Do you need background information on equipment for industrial safety, hygiene, or maintenance?**

As a service to its readers, "Safety Maintenance" will arrange to supply manufacturers literature on the following subjects. Just insert the key number on the Readers Inquiry Card on the preceding page and be sure to fill in your name and address. If you need information on a specific type of product, simply write it in on the Inquiry Card.

Key Number	Subject
	PERSONAL PROTECTION
101	Safety Goggles
102	Face Shields
103	Lens Cleaning & Anti-Fogging Equipment
104	Sweat Band
105	Hard Hats
106	Respirators & Masks
107	Protective Clothing
108	Women's Protective Clothing
109	Safety Belts
109A	Vehicle Safety Belts
110	Safety Gloves
111	Foot Protection
112	Anti-Slip Soles
113	Oil-Proof Soles
114	Welding Helmets
115	Welding Curtains
	FIRST AID AND PERSONAL HYGIENE
120	Protective Skin Cream
121	Skin Cleansers
122	Sanitary Drinking Facilities
123	Athlete's Foot Control
124	Salt Tablets
125	Noise Analysis & Control
126	Antiseptic Medication
127	Burn Medication
128	First Aid Kits & Supplies
128A	Rescue Kits
129	Stretchers & Litters
130	Throat Medication
131	Eye Wash Fountains
132	Hearing Tester
133	Disinfectant—Deodorants
	FIRE PROTECTION
141	Safety Cans
142	Drum Safety Valves
143	Safer Solvents
144	Degreasing Machines
146	Fire Blankets
148	Watchmen's Control Systems
149	Fire Resistant Hydraulic Fluids
	LIGHTING EQUIPMENT
150	Alarms & Warning Lights
152	Electrical Insulation Tester
153	Fluorescent Lamp Guards
154	Emergency Lights
	MAINTENANCE
160	Anti-Slip Floor & Mats
161	Anti-Slip Waxes & Finishes
162	Floor Cleaning Compounds
163	Cleaning Machines
164	Oil & Grease Absorbents
165	Paints
166	Floor Resurfacing Materials
	LADDERS & HANDLING
170	Ladders
171	Ladder Safety Devices
172	Scaffolds
173	Work Platforms
174	Slings
175	Safety Hooks
176	Fork Truck Steering Aid
176A	Fork Truck Fume Muffler
177	Acid Pumps
	GUARDS
178	Machine Guards
179	Power Press Feeders
180	Safety Tools
180A	Valve Operators
	EDUCATIONAL AIDS
181	Safety Signs
182	Safety Awards & Emblems
183	Employee Safety Guide
184	Aisle Marking Equipment
185	Bulletin Boards

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in motion. Model 2100 carries 200 feet of single conductor cable on a reel at the rear of the tank. Motor pump assembly, including controls and valves, is recessed in the side of the tank for ease of "hook-up" and maintenance. A 20-horsepower 3500-RPM electric motor is directly coupled to a two-stage centrifugal pump that delivers 100 gallons of water per minute, with a 450-foot head, and is capable of throwing an effective horizontal stream a distance of 100 feet. The special hose nozzle will deliver either a heavy fog or an extremely concentrated straight stream of water.

DRUM HANDLER

(Use Key # 863 on Inquiry Card on page 73)

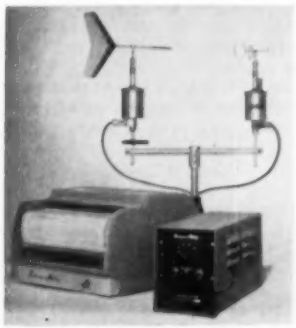
ONE MAN can handle, with ease and safety, drums weighing up to 1,000 lbs. with the Model 66 drum handler, according to the company, the Coolant Equipment Corp. Standard 30 and 55 gallon drums holding liquids, small parts, chips, refuse, etc., can be transported safely in open or closed end drums, or those with fully removable heads. The operator lifts loads from a safe position with the aid of a hydraulic pump and ram. The load is balanced and can not tip or slip while being lifted.

The drum handler features a narrow turning radius, making it practical for crowded plant aisles. The handler is also available with a hand-operated, one-way 10-gpm pump for dispensing liquids directly from the drum-in-transit.

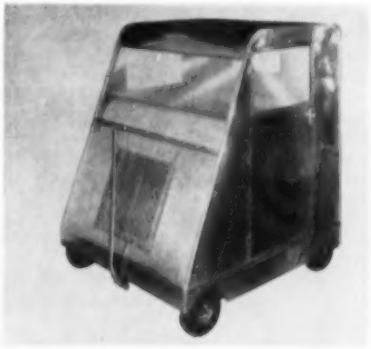
WIND-RECORDING SYSTEM

(Use Key # 864 on Inquiry Card on page 73)

DESIGNED to maximize the resolution of fine detail in slow-speed winds and at the same time maintain accuracies of ±4 percent full scale for wind speed and ± 3 percent for wind direction, the new Beckman & Whitley Type F Wind-Recording System has been engineered for fixed-station operation with 115-volt 60-cps power. (In the illustration, the equipment is shown with a typical chart recorder.) Wind-speed signals are derived from a precision anemometer incorporating a drag-free transducer based on the principle of high-speed light-beam chopping. The wind-direction transmitter utilizes a low-inertia potentiometer for position sensing. Resulting electrical signals are especially well suited for use with telemetered data-collection systems. The resulting data is compatible with portable equipment.



Where high resolution of this kind is required for portable field operation, an accessory battery-operated power supply is available. Other features of the Type F System include: standardization of parts and subassemblies to permit interchangeability in field servicing; pre-calibration of all system components so that equipment can be quickly set up in the field; use of corrosion-resistant materials in all exposed parts; availability of an inert-gas purging system which can be added where atmospheric conditions are particularly unfavorable; and instantaneous switching between the four available scales ranging up to 6, 12, 30, and 60 mph. Useful for air pollution control studies.



PORTABLE AIR-CONDITIONED BOOTH

(Use Key # 865 on Inquiry Card on page 73)

A PORTABLE, cab-type cooling compartment in which workmen can take refuge from the extreme heat generated by certain types of industrial operations has been introduced by the Peuchen Engineering Corp. Known as the Breeze Wagon Cooling Cab, the unit is actually an air-conditioned booth on wheels. According to the company, it answers a distinct need of steel mills, foundries, blast furnaces and chemical plants.

Although the cab will be available in sizes to accommodate two, four or six persons at a time, pilot models are two-man capacity which measure 56 inches in length, 46 inches wide, and 66 inches high. They are made of heat reflective aluminum and are insulated as well as air-conditioned by filtered air which dehumidifies as it cools. In appearance, the unit resembles a detached truck cab. A tight-fitting door admits the worker to a roomy interior where he can rest on a comfortable seat behind a thick glass "windshield." A thermostat is provided to regulate temperature within the cab, but operation is fully automatic after the thermostat has been set, and a shut-off switch functions if the door should be left open. The cab weighs less than 1,000 lbs., and is easily portable by one man as it rolls on four small pneumatic-tired wheels. Cooling action within the cab is said to be almost instantaneous. The company claims the cab promotes worker efficiency by permitting workmen to take relief breaks without leaving the building. Complete airflow through the cab eliminates perspiration odors. Electrical equipment is dustproof and explosion-proof.

PORTABLE EMERGENCY SIGNAL

(Use Key # 866 on Inquiry Card on page 73)

A PORTABLE emergency signal featuring two red lights which beam in two directions and alternately flash 60 times per minute has been introduced by the New Castle Battery Mfg. Co. It is designed for use by utility companies, street and highway departments, maintenance crews, etc.

The battery operated unit is said to furnish its flashing signal for approximately 24 hours. A built-in charger will recharge the battery in 12 hours. The unit weighs 48 pounds and measures 9 x 11 x 15 inches. A spot light with extension cord that plugs into the unit is available as optional equipment.

LOW SILHOUETTE FLOOR MACHINE

(Use Key # 867 on Inquiry Card on page 73)

A SINGLE-BRUSH floor machine of a low design has been announced by Hillyard Chemical Co. Called the Hilboy, the machine measures 9½" in height. Its low silhouette permits use of the machine in previously inaccessible areas when scrubbing, polishing, steel wooling, sanding, or grinding floors.

The Hilboy features a low-design motor, pistol-grip handles, designed to lessen hand fatique, and retractable, individually suspended wheels for easy portability. A simple switch reverses the direction of rotation to retard brush wear. Another switch instantly adapts the machine to either 110 or 220 volt circuits. The machine is available in two brush sizes: 17" and 21" in diameter.

ALUMINUM SAFETY HAT

(Use Key # 868 on Inquiry Card on page 73)

A NEW aluminum alloy safety hat, ribbed for blow resistance and with a headgear that is completely adjustable (sizes 6⅝ to 8) has been announced by The Boyer-Campbell Co. It is identified to the trade as "Superlite." Light-in-weight, it features longitudinal ribbing and rolled edges. It is equipped with polyethylene head suspension marked in various sizes, in divisions of ⅛. The full-floating headgear is said to make practical its wear the clock-around without knowing it is there. Suspension is mildew, mold, and fungus-proof, doesn't mat up with grease and oil, and is easily and quickly cleaned. When re-issued, nothing but the sweatband need be replaced. Half-liners for cool and full liners for cold weather are available.

SYNTHETIC RUBBER GLOVES

(Use Key # 869 on Inquiry Card on page 73)

A LINE OF Wil-Gard Buna-N synthetic rubber gloves, recommended for use with aliphatic hydrocarbons, has been introduced by The Wilson Rubber Co. Bearing good resistance properties in virtually all industrial greases, oils, solvents and chemicals, the new gloves are designed to give extra-long wear. They also provide good resistance to abrasion, punctures, snagging, and extreme temperatures.

The gloves feature Wilson's Firmhold finish. Buna-N gloves are available in light, medium, medium heavy, heavy and extra heavy weights, lengths of 10½ to 18 inches, and in sizes 7 through 11.

FIBRE GLASS FACE SHIELDS

(Use Key # 870 on Inquiry Card on page 73)

FEATURING a fibreglass spark guard, a new face shield has been introduced by Sellstrom Mfg. Co. The manufacturer says use of this material eliminates the moisture-and-heat absorbing characteristics that quickly distort or destroy ordinary face shields used in welding, grinding and other hazardous occupations.

Besides its shape-retaining qualities, the new face shield, known as No. 328, is said to afford a large window area. Coverage around the face is 19 inches, with a choice of either eight or ten inches window height. A ratchet adjustment provides the plastic headgear with a comfortable, exact fit to the head of the wearer. Windows, available in green or clear shades, are easily replaced; they are also supplied with an aluminum binding if desired.

TWO NEW INSECTICIDES

(Use Key # 871 on Inquiry Card on page 73)

TWO NEW insecticides, one in a pressurized spray and the other in liquid form, have been developed for commercial and institutional use by S. C. Johnson & Son, Inc. The pressurized spray is known as Johnson's Raid Bug Killer and the liquid product is called Johnson's Raid Insect Spray. Both are for use in hospitals, industrial plants, institutions, dairy plants, warehouses, and similar large installations.

The pressurized spray is packed in 16-ounce containers and the liquid, for use in mechanical dispensers, is available in one-, five-, 30- and 55-gallon containers. Although they are non-toxic and safe with respect to human beings and pets when used as directed, both products contain a high concentration of synergized pyrethrins. The liquid formula, even at half strength, complies with the U. S. Department of Commerce Commercial Standard CS72-54 for Grade AA Household Fly Spray. The

company claims the products will kill even those flying and crawling insects that have built up resistance to DDT and chlordane. The products are not classified as "residual" but Raid deposits will kill roaches and other crawling insects up to 48 hours after spraying.

TINY OXYGEN REGULATOR

(Use Key # 872 on Inquiry Card on page 73)

A COMPACT miniature oxygen regulator which, according to the manufacturer, assures greater safety, comfort and reliability in a wide variety of industrial, public health and civil defense applications, has been introduced by the Aeronautical Div. of Robertshaw-Fulton Controls Co. The regulator is lightweight, weighing only 1½ ounces, and measures 1¾ inches in diameter by ⅞ inch in thickness—or about one-twentieth the weight and size of the usual oxygen regulators. In addition, it has low suction flow characteristics, meaning that the user can draw in oxygen with normal breathing, as compared to as much as ten times the normal breathing exertion that is required to open most conventional regulators. The manufacturer claims this ease of breathing offers a number of health and safety advantages. For example, the low suction required to open the regulator valve lessens the danger of breathing in contaminated or toxic air which may occur as a result of mask leakage when abnormally strong breathing is necessary. Ease of breathing also minimizes worker fatigue. In addition, it could mean the difference between life and death for an injured or critically ill person experiencing breathing difficulties while being transported with a mobile oxygen supply.

The lightweight device, according to the manufacturer, offers greatly improved wearer visibility, comfort and arm mobility. Since the new regulator has no sliding or moving parts, and none are aged by ozone, the device has long shelf-life and durability. It is said to be applicable for use in rescue and underwater breathing systems, in hospitals and ambulances utilizing mobile oxygen systems, and in industrial safety equipment designed for use in fire-fighting as well as in toxic or other contaminated atmospheres.

ACID LEAK-INDICATING TAPE

(Use Key # 873 on Inquiry Card on page 73)

A PLASTIC, leak-indicating tape for wrapping acid and caustic transport pipe lines has been developed by Neirad Industries, Inc. The tape can be wrapped around pipe lines and will indicate by a discoloration of the tape anywhere a leak or "weep" occurs. It is intended for areas where leaking acid or caustic would be a hazard to personnel, as well as equipment.

The tape is made of fiber glass with a vinyl covering and coated with a patented indicator. Acid lines are covered with a red-colored indicator that turns yellow when triggered by leaking acid. A white colored tape is used for caustic lines and leakage of caustic liquid turns the color

purple. The indicating material is covered by a thin protective coating to prevent triggering by fumes or climatic conditions. The tape is available in widths of from 1 to 38 inches, and in lengths up to 300 feet.

12-INCH SAFETY BOOT

(Use Key # 874 on Inquiry Card on page 73)

AN EXTRA-HIGH safety boot designed for heavy-duty wear has been introduced by Hy-Test Safety Shoes, division of International Shoe Co. Hy-Test's H960 boot has a height of twelve inches which provides leg as well as foot protection. It also includes reinforced features that give it the sturdiness demanded by industry.

Brass rivets lend additional strength to the vamp of this black leather boot. The double Resist-Oil composition sole offers increased durability through reinforced nail-

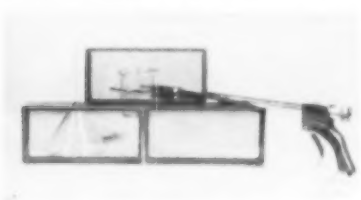
ing, and a tough outside pocket shields the counter. It also includes a steel shank and storm welt. Protection to the toes is given by the famous Anchor Flange Steel box toe. The Bol Tan leather insole is sweat-resistant, and there is a Durisco mildew-proof lining.

LEAD-GLASS BRICK

(Use Key # 875 on Inquiry Card on page 73)

A NEW TYPE of glass shielding brick that is as dense as iron, and 2½ as dense as lead, has been announced by The Atomic Center, Inc. Used as an insert in a metallic or concrete wall, the lead glass brick enables the worker to observe the action, perform remote manipulations, and even read instruments behind the wall shield.

Three sizes of brick are cast, including a large 8 x 8 x 4 inch square block for maximum viewing angle. The bricks are composed of a special lead glass mixture, and are mounted in a steel frame for protection and handling. Lead glass is an addition to the family of radiation shield building materials, which includes lead, iron and steel. For specific counting applications, upright cylindrical shields and "interlocking doughnut" types are also available.



LIGHT-HAZARD SAFETY SPECTACLES

(Use Key # 876 on Inquiry Card on page 73)

NEW LIGHTWEIGHT safety spectacles which may be used for semi-hazardous

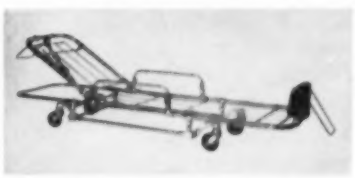
operations as well as for the protection of visitors to in-plant locations have been announced by the General Scientific Equipment Co. Spectacle lenses, either clear or dark green, are molded of .060" thick, impact-resistant plastic having high optical qualities. Attractively styled frames with spatula temples fit any face with a minimum of adjustment, eliminating the need to stock more than the one standard size. Spectacles may be worn comfortably over prescription glasses.

The spectacles are suitable for light grinding, spot welding, laboratory and other similar light-hazard uses. Each pair is furnished with a paper fleece-lined slide case to protect the glasses when they are not being worn.

LOW SILHOUETTE EMERGENCY COT

(Use Key # 877 on Inquiry Card on page 73)

A LOW silhouette ambulance and emergency cot has been made available by the Washington Products Co. The Model 21-L



cot is only 8¼ inches high, and well suited for use in low-topped emergency vehicles.

This new cot is lightweight yet rugged and sturdy. Made of polished aluminum alloy tubing and castings, it has silent, free-rolling wheels. Its lower frame carrying rail makes it easy to use. Other features include trigger release side rails and adjustable back rest with nine-position squeeze lock adjustment.

SPRAY AIR CONDITIONER

(Use Key # 878 on Inquiry Card on page 73)

WOODLETS, INC. is marketing its Ozium air reconditioning spray in an aerosol container with a patented "metering" valve that delivers a predetermined amount of spray. The air-freshening formula is said to be a well balanced mixture of propylene and triethylene glycols with other chemicals which in mist form not only destroys odors but sanitizes the air by removing smoke and air-borne bacteria. The manufacturer claims that because Ozium readily absorbs and retains moisture, the mist particles surround floating moisture particles which contain organic odors and smoke and filter them out. Illustrated is the new No. 500 Personal Size Dispenser, which because of the metering valve gives 500 individual sprays.

LIGHTWEIGHT STEP LADDER

(Use Key # 879 on Inquiry Card on page 73)

THE NEW Ambassador step ladder announced by W. W. Babcock Co. reportedly offers two noteworthy features. Its flush-top design includes wrap-around top brackets attached to the top and rails by rivets for greater strength and protection against wrack. The top ends are protected by steel splining to prevent warp. The second feature is a double-braced back which provides a back section of high strength and safety. This is steel rung braced, riveted to top and bottom rungs. Center woodbracing, all rungs.

The Ambassador is designed as a medium-duty lightweight step ladder for painters, maintenance workers, contractors, etc. The ladder is available in sizes from 4 to 10 feet.

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